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MAJOR CROP PROGRESS AND WEATHER REPORTING

PREPARATIONS FOR WINTER CROP SOWING IN LITHUANIA DISCUSSED

Vilnius SOVETSKAYA LITVA in Russian 11 Jul 81 p 1

/Article by A. Simaytis, chief of the Administration of Farming of the Lithuanian SSR Ministry of Agriculture, and V. Barbashin, correspondent of SOVETSKAYA LITVA: "For the Winter Field"7

/Excerpts/ The republic's farms have allocated more than 490,000 hectares for winter crops this year. This is a big field. As compared with last year, it will expand approximately by 94,000 hectares. The winter wedge is being increased not by accident. The point is that rye and wheat are the most valuable food crops and their yield is stable and high.

Now, despite the fact that farmers are busy (they are laying in fodder and preparing for the harvest), persistent work on the preparation for the sowing of winter crops is being carried out on the republic's kolkhozes and sovkhoses. The experiments of scientists and advanced practice convincingly indicate that predecessors have a tremendous effect on the harvest. When they are well selected, they contribute to an increase of 20 percent in the harvest. At the same time, however, during the past five-year plan, on the average, 17.6 percent and during some years up to 35 percent of the winter crops had to be resown annually. Scientists and specialists maintain that poor predecessors were the main reason for this. This means that in the interest of the cause now it is necessary to select good predecessors everywhere. However, specialists on a number of kolkhozes and sovkhoses do not pay proper attention to this. This year they also intend to place sizable areas of winter crops after poor predecessors, that is, after spring grain crops, winter crops and flax and on reclaimed land during the first year of its development. Information arriving from rayons to the Ministry of Agriculture indicates that farms in Vil'nyusskiy Rayon plan to sow 35 percent of the total area of winter crops after unfavorable predecessors, in Radvilishskiy Rayon, 32 percent, in Prenayskiy Rayon, 31 percent and in Ionavskiy Rayon, 29.4 percent. Plans are made to sow winter crops on 1,000 hectares in Panevezhskiy Rayon and on 766 hectares in Pasval'skiy Rayon after reclamation. There is still time to rectify the situation and to select the most suitable plots, especially under annual grass, for winter crops.

Time is running out. All clover stubbles should be plowed in the next few days. Meanwhile, this work has not even been done on one-half of the areas at the best time. Farms in Anikshchyayskiy, Kedaynskiy and some other rayons lag especially. What is the reason for the low rates of clover stubble plowing? The main reason

lies in the established unfit practice by some managers of farms, where clover stubbles are kept for livestock grazing and thereby soil preparation is delayed. Late plowing results in the following: Sod residues do not have time to rot and soil does not cake properly, but seeds are placed in it. This is a gross violation of agrotechnology. It sharply lowers the harvest. The additional grass obtained from clover stubbles under no circumstances makes up for the damage done to the harvest of grain crops.

Black fallow deserves special attention. Agrotechnology requires this land to be black, well cultivated and without weeds. Organic fertilizers must be applied to soil and stones must be removed from fields. In other words, plots must be cultivated and prepared for winter crops. In practice, however, here and there this is not observed. For example, on some farms in Trakayskiy and Kel'meskiy Rayons large areas have been allocated for black fallow, but they are overgrown with weeds. Their first plowing has been completed only recently.

People say that rye lies firmly in the ground, but it likes a soft cover. Therefore, before the middle of August it is necessary to prepare soil well everywhere so that it may cake. As practice has shown, the farms that postpone this work to later dates, as a rule, obtain 2 to 4 quintals of grain per hectare less. Such losses must not be tolerated in any way now.

Seeds are the basis for the harvest. If they are of a good quality and of regionalized, most productive varieties, as a rule, this increases the harvest by 5 to 8 quintals per hectare. Therefore, kolkhoz and sovkhos specialists are called upon to manifest special concern for seeds, especially as this year it is possible to sow choice grain. Some good, physiologically ripe rye grain remained from last year and it must be treated in advance and sown promptly. Furthermore, the duty of farm agronomists now is to check all the sown areas, to select seed plots, to remove grain from them and to also use it for seeds. It is very important to see to it that wheat of such productive varieties as Mironovskaya 808 and Starke-II and rye of such varieties as Kombayninyay, Kustro and Chulpan are sown. On strain testing plots Chulpan produces 70 quintals of grain per hectare and more. Therefore, all the grain of this variety must be used for seeds.

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MAJOR CROP PROGRESS AND WEATHER REPORTING

CURRENT FIELD WORK IN BELORUSSIA SURVEYED

Minsk SEL'SKAYA GAZETA in Russian 30 Oct 81 p 1

/Article: "Concluding Field Work"/

/Excerpts/ The first year of the 11th Five-Year Plan is marked by a new upsurge in the labor activity of Belorussian farmers. Field crop growers, machine operators and livestock breeders have exerted much effort to honorably fulfill the tasks facing them.

The last 60,000 hectares of the fall field are being plowed. There is hope that this work will be completed in the next 4 or 5 days. At the same time, agronomical services in the localities, which are preparing bastard fallow inefficiently, must be rebuked. With a plan of 800,000 hectares work has been done on less than one-half.

Field liming work is near completion.

The inspection of winter fields made has shown that crops are in a good condition. At the discretion of the agronomical service it is possible to begin mowing--winter crops are overgrowing--in a number of rayons. This is especially characteristic of Gomel'skaya and Brestskaya Oblasts, where sowing was carried out at the earliest time.

Work with the seed stock--the basis for the future harvest--is beginning. All oblasts fulfilled the general plan for laying in seeds. In their quality indicators they are much better than last year. Only in some rayons is there a shortage of seeds of some grasses, buckwheat and pulse crops.

There are possibilities of replenishing deficient seeds. For example, the gross output of buckwheat makes it possible, with appropriate further work, to lay in the necessary amount of seeds of our Belorussian regionalized varieties. It is also necessary to intensively carry out an interfarm exchange, to select high-grade regionalized seeds on specialized farms and to continue work on their cleaning and testing for germination. The harvesting conditions have now made it possible to lay in dry seeds, but in a number of places it is necessary to dry up the seeds of some pulse crops, buckwheat and rape. Agronomists should constantly observe the state of seed stocks. Special attention should be paid to potato seed plants. In the present warm weather there is a danger that tubers will become overheated in clamps and will rot.

The procurement and carting of organic fertilizers to fields are beginning. On the whole, the annual plan is being fulfilled in the republic--about 69 million tons have already been carted out. Success is attained through the establishment of mechanized detachments. Work must begin immediately, without waiting for freezing weather. A number of farms in Dzerzhinskiy Rayon work well with local fertilizers. The Rossiya Kolkhoz is an example. A total of 32 quintals of grain crops per hectare have now been obtained and a good potato harvest has been gathered. Such heights have been attained owing to a good application of organic fertilizers to soil--30 to 33 tons per hectare. Work on the accumulation and carting of composts is not being delayed now.

The agricultural year is coming to an end. However, winter brings many new problems, on the successful solution of which the future harvest depends. Looking back at the concluded year, it is necessary to carefully analyze both successes and oversights. Party organizations, farm managers and agronomical services should head this work. Let every success, like every failure, serve as a lesson for the future.

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UNSATISFACTORY WINTER SOWING CAMPAIGN IN BELORUSSIA SCORED

Minsk SEL'SKAYA GAZETA in Russian 30 Aug 81 p 1

/Editorial: "Concern for the Winter Field"/

/Text/ In late fall, when all work is done, the farmer glances over the naked fields and the black areas of the plowed fall field. His eye will surely linger longer on the emerald green rye. This is his new hope, this is the future harvest. The whole winter is ahead and he, master of fields, who not long ago with the generous hand of a sower scattered seeds on soft arable land, is already worried about the fate of winter crops, the fate of tomorrow's rye loaf.

Practice has shown and scientists have confirmed later that winter cereals are considered insurance crops not without reason. Whatever the year may be--dry or wet--winter crops produce stable yields. Here are the data for the 10th Five-Year Plan. Winter crops occupy a little more than one-third in the structure of grain areas in the republic and yield up to 40 percent of the gross output of grain and more. There are similar examples also this year. Minskaya Oblast gathered 24 quintals of grain per hectare from the winter field, which is almost 3 quintals more than the total yield figure. The labor reports of the Pobeda Kolkhoz in Zhitkovichskiy Rayon, the Mayak Kommunizma Kolkhoz in Borisovskiy Rayon, the 40 Let Oktyabrya Kolkhoz in Stolinskiy Rayon, the Leninskiy Put' Kolkhoz in Slutskiy Rayon and the Krasnaya Zvezda Pedigree Farm in Kletskiy Rayon state that the winter field has become the basis for high yields of grain. On these farms agricultural workers grew and gathered 40 quintals of rye and winter wheat per hectare and more.

The time of winter crop sowing has now begun. Kolkhozes and sovkhoses will have to carry out excellent-quality sowing on 1,440 hectares at the optimum time. This is a good year. Therefore, it has been possible to make good preparations for sowing in order to carry it out at the optimum time and at a high agrotechnical level. However, the present situation is not satisfactory everywhere. Numbered days have remained before the beginning of the fall sowing campaign in the republic's southern zone, but a number of rayons in Brestskaya and Gomel'skaya Oblasts, including Baranovichskiy, Gantsevichskiy, Maloritskiy, Braginskiy, Loyevskiy and others, delay the preparation of areas for sowing. Specialists in the localities are passive, there is no control and proper mobilization of people for the performance of this operation and labor discipline is weak. It is not enough to plow soil. A number of preparatory operations, including harrowing and presowing leveling, will have to be carried out on it. All this will require time. As a result, sowing may exceed the limits of the optimum time, which, in turn, presents the danger of a harvest deficiency.

The situation with the application of organic fertilizers is rather bad. The mechanized links of the farms themselves and detachments of Sel'khozkhimiya handle this. With an assignment of 9 million tons the real figure of applied fertilizers is much lower. But organic fertilizers are not simply yield raising agents. Winter crops have a longer vegetative period. Therefore, they utilize fertilizers more fully. Organic fertilizers strengthen plants, increase the resistance of winter crops to diseases and enable them to tolerate wintering and an excess or shortage of moisture more easily. Agronomists in the localities must know this. Their duty is to more widely develop preparatory work for sowing and to control quality more efficiently during the remaining time.

In the republic now there is every opportunity to sow high-grade seeds of high reproductions everywhere. However, according to the data of the Belorussian SSR Sortsemprom, further improvements in seeds are carried out slowly. In the republic a little more than 60 percent of the seeds stocked for sowing for grain belong to the first category of the sowing standard. On farms in Minskiy, Logoyskiy, Gorodokskiy, Miorskiy, Postavskiy, Shchuchinskiy and Osipovichskiy Rayons only one-fifth of the seeds pertain to the first category. Of course, these figures are not final. However, the calmness of seed growing agronomists and of managers of farms and of rayon agricultural bodies, who on the eve of fall sowing do not manifest concern for the state of their seed reserves, is surprising.

According to the experience of past years and recommendations by scientists, sowing time should be established in a more differentiated way, not only with due regard for natural and geographic zones. Soil fertility also plays an important role. On good land sowing can also be carried out later (of course, within the optimum time) and on weak soil, earlier. This is done so plants have time to strengthen and thicken out before they are covered with snow. It is also necessary to see to it that sowing is thick. Thinness, like crowdedness, results in a harvest deficiency.

Overall mechanized links should carry out fall sowing. Sowing crews are formed in advance, a specific assignment and daily norms are given to them and the fields where work is to be done are named. Plots are divided into strips and sowing is carried out by the shuttle method. With a group utilization of equipment it is important to estimate the places where seeders are filled in order to avoid empty runs of equipment. It is necessary to soundly select the operating speed of units. At the speed of 7 to 8 km per hour it is difficult to regulate the depth of seed placement--in such cases waste is possible. A seeder must have light rollers for packing the upper soil layer.

Experienced grain growers know that the winter hectare generously pays those who perform all the operations on it at the best time, sow good seeds on fertilized soil and fully observe agrotechnical requirements. Concern for the people whose hands will sow the winter field, for their working conditions, meals in the field and rest, for the high technical readiness of machines and for publicity for socialist competition will contribute to this. The party organizations of farms should assume the whole burden of the sowing campaign, because there is nothing more important on earth than to grow grain.

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MAJOR CROP PROGRESS AND WEATHER REPORTING

BRIEFS

SEEDS FOR SPRING--Brest, 13 Oct--The oblast's kolkhozes and sovkhoses have fulfilled the plan for laying in seeds of spring grain and pulse crops. Further work on seeds is now being done on farms. This work is well organized in Brestskiy Rayon. Permanent links have been established everywhere and their work has been organized in two shifts. All seeds of spring grain crops throughout the oblast will be brought up to high sowing requirements by 1 November. /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 14 Oct 81 p 1/ 11,439

FALL PLOWING--The fall field is being plowed. The increase in plowed areas in a week averaged 14 percent throughout the republic; in Daugavpilsskiy Rayon, 25 percent and in Aluksnenskiy and Kraslavskiy Rayons, 19 percent. Not enough tractors operate in plowing in Ventspilsskiy and Liyepayskiy Rayons. A total of 8 and 9 percent of the fall field has been plowed there in a week. /Excerpt/ /Riga SOVETSKAYA LATVIYA in Russian 5 Oct 81 p 1/ 11,439

FALL PLOWING DETACHMENTS--Minsk--Belorussia's machine operators have begun breaking the fall field on the last $\frac{1}{2}$ million hectares. For the most rapid completion of fall plowing interfarm detachments equipped with powerful tractors were formed in many rayons in Mogilevskaya, Vitebskaya and other Oblasts. Bastard fallow cultivation of fields is carried out simultaneously with basic cultivation. /Text/ /Moscow TRUD in Russian 6 Oct 81 p 1/ 11,439

MUTUAL HELP IN PLOWING--The republic's farmers are preparing to meet the 64th anniversary of the Great October in an appropriate way. Kolkhozes and sovkhoses try to complete all field operations more rapidly. Last week the plowed area increased 14 percent. A total of 208 farms have already fulfilled the fall plowing plan. Daugavpilsskiy, Rizhskiy, Kraslavskiy and Preyl'skiy Rayons have fully completed the breaking of the fall field. However, plowing has been prolonged on a number of farms. Only one-third of the planned area has been plowed on the Liyekna Kolkhoz in Ventspilsskiy Rayon and on the Sovkhoz imeni K. Marx in Tukumskiy Rayon. The Uzvara Kolkhoz in Liyepayskiy Rayon, the Stalpe Kolkhoz in Bauskiy Rayon and a number of other farms are lagging behind schedule. The incompetent organization of labor and the fact that there are not enough tractors in the furrow are the reasons for the lag. In every rayon there are possibilities of increasing the rates of field work. Mutual help is one of them. Machine operators on the Ter-vete Kolkhoz in Dobel'skiy Rayon showed a good example. Having fully completed plowing on their farm, they came to the aid of their neighbors and sent power saturated tractors and the best plowers to them. Such an initiative must be popularized everywhere. /Excerpt/ /Riga SOVETSKAYA LATVIYA in Russian 27 Oct 81 p 1/ 11,439

LAG IN FALL PLOWING--The best time for the plowing of the fall field is running out. However, 24 percent of the soil has not been plowed. Farms in Birzhayskiy, Ionavskiy, Mazheykskiy, Klaypedskiy, Raseynskiy and Trakayskiy Rayons lag especially. Plowing has not been carried out in a high-quality manner everywhere. Weeds have appeared on plowed areas here and there. These plots must be recultivated. Beginning in fall soil must be cultivated in an overall manner. It is necessary to apply ammonia water, to level the surface and to apply organic and mineral fertilizers. Herbicides should be used for weed control. /Excerpt/ Vilnius SOVETSKAYA LITVA in Russian 14 Oct 81 p 1 11,439

QUALITY OF FALL PLOWING--Farms in Kedaynskiy, Shakyayskiy, Vilkavishkskiy and Lazdiyskiy Rayons have already completed fall plowing. Unfortunately, last week there were low rates of fall plowing in Panevezhskiy, Plungeskiy, Shilal'skiy, Rokishskiy and Pakruoyskiy Rayons. The best agrotechnical time for this work is coming to an end. Therefore, machine operators on farms, where fall plowing has not yet been completed, should hurry up. Farm managers and specialists must also concern themselves with the quality of plowing of the fall field and cultivate as much soil as possible in an overall manner. /Text/ Vilnius SOVETSKAYA LITVA in Russian 21 Oct 81 p 1/ 11,439

PERCENT OF PLOWED AREAS--Kolkhozes and sovkhoses are completing the plowing of the fall field. Last week the increase in plowed areas comprised 7 percent. In Dobel'skiy and Talsinskiy Rayons this indicator was 13 percent, in Tsesisskiy Rayon, 12 percent, in Yelgavskiy, Valkskiy and Tukumskiy Rayons, 11 percent and in Bauskiy, Kuldigskiy and Stuchkinskiy Rayons, 10 percent. The rates of plowing in Valmiyerskiy and Ogrskiy Rayons are lower than in other rayons--6 percent. Many farms, having completed plowing, are helping their neighbors. For example, in Dobel'skiy Rayon plowers from the Tervete Kolkhoz work in a shock manner in the fields of neighboring farms and in Ludzenskiy Rayon, from the Kolkhoz imeni Kirov. It is important to complete the plowing of the fall field in the next few days. /Excerpt/ Riga SOVETSKAYA LATVIYA in Russian 3 Nov 81 p 3/ 11,439

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LIVESTOCK

PLACEMENT OF MILK PROCESSING PLANTS NEAR DAIRY FARMS URGED

Moscow SEL'SKAYA ZHIZN' in Russian 26 Nov 81 p 2

/Article by O. Tereshchenko, candidate of economic sciences, and V. Papelo, scientific worker at the Siberian Scientific Research Institute of Economics of Agriculture, Novosibirskaya Oblast: "Farm in the Suburb"

/Text Where to place a milk processing enterprise? This is not a useless question. Success in the operation of both dairy farms and plants largely depends on this. Here is a simple example: In order to load enterprises producing cheese, butter and other products, every year it is necessary to transport (sometimes at a distance of many hundreds of kilometers) 40,000 tons of milk to Kemerovo, 90,000, to Omsk and 110,000, to Novosibirsk. Comrade L. I. Brezhnev discussed this situation characteristic of many of the country's zones in his speech at the November Plenum of the CPSU Central Committee. These expensive transport operations can be reduced and even eliminated completely with an efficient distribution of the dairy industry and a sound specialization of suburban farms.

The sectors of the dairy industry are divided into two big groups. In one enterprises gravitate toward the places of consumption of products and in the other, toward the places of production of raw materials. Whole milk production belongs to the first group. Of course, the smaller the distance from the plant to the store and from the farm to the plant, the more quickly the consumer will receive whole milk and the higher its quality will be. In this case raw materials are more transportable than output and their expenditure is expressed in the ratio 1:1. The second group includes the production of butter, cheese, dry milk and canned products. The expenditure of raw materials ranges from 1:2.5 to 1:23 and they are less transportable than the finished product. It is not difficult to estimate how much cheaper the transportation of 1 ton of butter than of the milk used for its production will be.

Unfortunately, this was not taken into account when the scheme of distribution of the dairy industry in West Siberia was worked out. Territorial specialization in the production of transportable types of dairy products--butter, cheese and dry milk--is not sufficiently developed there at all. As a rule, the enterprises producing them are built in large cities near the consumer. At the same time, neither the availability of the resources nor the quality of raw materials are taken into account. Therefore, not only milk for consumption in whole form, but for processing as well, must be transported to oblast centers. Moreover, almost 30 percent of the milk received in suburban rayons also arrives for processing, which greatly lowers its supply for urban residents.

When thinking about the distribution of industry (including the dairy industry), we must not forget the social aspect of the problem. By concentrating enterprises in oblast centers and taking out the industry from rayon towns and settlements, we contribute to an excessive growth of large cities and hamper the economic and social development of rayons. After all, in the last 10 years the size of the population of the largest cities in Siberia has increased 20 percent, whereas the population of rayon centers has decreased.

Apparently, it is advisable to increase primarily the capacities for the production of whole milk products in oblast centers. According to our estimates, they should be increased almost 1.5-fold. At the same time, it is better to place the production of butter and other transportable dairy products closer to the sources of raw materials, in rayon centers. It is difficult, but possible, to change the existing distribution of the sectors of the dairy industry if existing enterprises are gradually reequipped for the production of the envisaged products.

With regard to the provision of urban residents with whole milk products, for this it is advisable to specialize suburban farms in their production and to form belts of dairy husbandry around large cities. The proximity of the consumption center is a decisive factor in the formation of suburban dairy farming. Calculations show that in the very near future it will be necessary to establish whole milk belts consisting of five to six rayons, whose each farm could produce 45,000 to 65,000 quintals. For this each of them must have 1,500 to 1,900 cows. The expenditure of feed per cow must be increased to 37 or 38 quintals of fodder units and the average milk yields, to 3,300 or 3,500 kg. From the sale of milk such farms will obtain no less than one-half of the monetary proceeds.

The establishment of whole milk belts is an efficient form of development of suburban dairy farming. It will improve the servicing of dairy husbandry by the sectors of the sphere of material production and, at the same time, will facilitate the development of production and economic relations with the dairy industry on the basis of large-scale deliveries. At the same time, it is necessary to accelerate the development of the material base for commodity milk processing for the purpose of changing over to its centralized delivery with acceptance at the place of production. The expenditures on these measures, as a result of an improvement in the quality of milk alone, will be recovered in 2 years.

The rural population of suburban zones can only meet its need for whole milk from its private plots. But dairy products (butter, cheese and so forth) must be supplied to it through their production in the public sector. Otherwise it will be necessary to double milk production in the private sector, which is unrealistic.

The formation of whole milk belts and raw material zones on the basis of a balanced and proportional development of livestock husbandry and the dairy industry will make it possible to better supply rural residents with whole milk and its processing products and stimulates the transfer of milk production to an industrial basis.

However, a great deal depends, of course, on the livestock breeders themselves. For example, the great seasonal nature of dairy husbandry, which is increasing, complicates the work of the dairy industry and the supply of cities with whole milk. Whereas in the central eastern zone of Novosibirskaya Oblast in 1976-1977

commodity milk production in the second quarter totaled 117,000 tons, in the next 2 years, 205,000 tons, or almost twice as much. If this tendency persists, it will be difficult to fully utilize the capacities of the dairy industry. During the winter and spring period right now they are loaded with locally produced raw materials only at the rate of 60 to 65 percent. As a result, enterprises are forced to transport milk from remote regions, the radius of its transportation during these months reaches 400 km and transport costs increase by hundreds of thousands of rubles.

The situation can be helped if the transfer of dairy husbandry to an industrial basis is accelerated and stocks of raw materials are created at dairy industry enterprises during the peak of the season for their use during the interseasonal period.

It is clear to everyone that dairy husbandry in the suburban zone should develop with special intensity. In reality, in Siberia the rates of growth of milk production are declining. As compared with the Ninth Five-Year Plan they were lowered by 14 percent. It seems that it is a matter of an incorrectly chosen direction in the sector's development. The great advantages of intensification of animal husbandry are well known. Meanwhile, in Siberia in the last 5 years milk production has been increasing primarily as a result of an increase in the stock of cows. In the last few years their productivity has not increased and in a number of oblasts has even decreased.

The practical experience of many advanced farms attests to the great advantages of intensive development of dairy husbandry. Let us take the Bol'shevik Kolkhoz in Ordynskiy Rayon, Novosibirskaya Oblast. As of 1969 the milk yields of cows increased by 1,000 kg there, reaching 3,700 kg. The production costs of milk on the farm are only 18.1 rubles and direct labor expenditures, 3.2 man-hours.

Such results were attained with the stabilization of the stock and the development of the local feed base. During that period the level of feeding of cows increased from 30 to 45 quintals of fodder units. The proportion of purchased feed comprised only 2 percent. All the processes in dairy husbandry on the kolkhoz were mechanized.

The direct acceptance of milk by dairy industry enterprises on farms in the suburban zone and its delivery by the transport facilities of enterprises produce a great effect. This method is becoming more and more widespread. For example, in Novosibirskaya Oblast only in 1 year the central delivery of milk by dairy industry enterprises from the suburban zone increased from 27,400 to 41,000 tons. At the same time, the proportion of first-grade milk rose from 46 to 77 percent. However, only 40 percent of the farms work according to the progressive form. The further popularization of this valuable method is hampered by poor highways and access roads to the places of milk acceptance and by the shortage of equipment for the organization of dairy shops and units, capacities, weighing facilities and milk tank trucks.

In conclusion we would like to discuss another problem. As is well known, the marketability of milk can be increased considerably if the feeding of skimmed milk to calves is organized. However, first, only 25 percent of the skimmed milk obtained by the dairy industry of Novosibirsk during the year is returned to sovkhozes and kolkhozes. Second, owing to the seasonal nature in the production of

skimmed milk and buttermilk these raw materials are returned and sold to agriculture only in summer. At that time farms are unable to utilize the entire valuable feed according to purpose and give it even to adult animals. And in winter whole milk has to be used to feed young stock.

It is much more profitable to utilize skimmed milk in livestock breeding in the form of a whole milk substitute. Every ton of a whole milk substitute releases 8 tons of whole milk. However, dairy industry enterprises in West Siberia in 1980 fulfilled the plan for dry whole milk substitute production only 77 percent and failed to deliver more than 5,000 tons of this product. They say that there is a shortage of capacities. However, capital investments in the construction of one whole milk substitute plant are one-fifth of the investments necessary for the production of an equal amount of whole milk in a suburban zone. At the same time, current expenditures are one-third to one-fourth.

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LIVESTOCK FEED PROCUREMENT

PROBLEMS OF CULTIVATING FEED CROPS IN KAZAKH SSR

Improving Feed Grain Production

Alma-Ata SEL'SKOYE KHOZYAYSTVO KAZAKHSTANA in Russian No 5, May 81 pp 14-15

[Review of articles: "Forage Grain: Problems and Methods for Solving Them"]

[Text] Animal husbandry is today considered to be a vital front for work in the rural areas. In a report delivered before the 26th CPSU Congress, the general secretary of the CC CPSU Comrade L.I. Brezhnev stated: "In view of the fact that the requirements for bread grain are being satisfied completely, emphasis must be placed upon the cultivation of forage grain crops. Their proportion, with regard to the overall harvest of grain crops, must be raised considerably.

"In particular, the sowings of corn for grain and also soybeans must be expanded in Moldavia, the southern oblasts of the Ukraine, the north Caucasus, Central Asia and in the Trans-Caucasus. Many regions throughout the country enjoy fine conditions for the cultivation of peas, barley and oats. Generally speaking, the time is at hand for converting over, in a planned manner and taking into account the natural-economic conditions, to a more rational structure for the grain fields. Science and the specialists have an important input to make in this regard.

"In addition to grain, the production of coarse and succulent feed and protein additives must certainly be increased."

An important task has been assigned. And it must be solved not only by the farmers and animal husbandrymen, but also by the scientists and specialists attached to institutes and experimental stations. The articles sent in to the editorial board by readers contain specific and business-like advice and recommendations, the introduction of which may solve many of the problems.

Candidate of Economic Sciences G. Seytkasimov has drawn the conclusion that, for increasing the production of commodity grain, great importance is attached to the scientifically sound placement of agricultural crops by zones. Analysis reveals that the present structure for the areas under crops is not in keeping with the requirements and is in fact restraining agricultural development.

At the same time, it has been emphasized repeatedly during oblast conferences and seminars conducted in the rayons and on the farms that an increase in the proportion

of barley and oats in the grain fields in Severo-Kazakhstanskaya Oblast is of tremendous importance. Computations indicate that it is feasible to expand the sowing areas for these crops in all rayons. The reserves available on farms in Bishkul'skiy, Bulayevskiy, Mamlyutskiy, Sokolovskiy and Presnovskiy Rayons are especially great. The most productive of the crops is oats. Thus a twofold expansion of the sowing area for this crop and a 25-35 percent increase in the barley area will produce a great economic effect and make it possible to increase the oblast's annual gross yield of grain by 250,000-280,000 tons. And this in turn will fully cover the animal husbandry requirements for forage and it will improve the supplying of raw materials to the enterprises of the mixed feed industry.

"A further increase can be achieved in the production of barley and oats by improving the structure of the areas under crops and particularly by reducing the sowings of less productive crops" proposed the author.

The proposal was completely justified. Actually, its implementation will reduce the production costs for animal husbandry products. Here are several figures which clearly confirm this fact. The production cost at sovkhoses and kolkhoses throughout the oblast for one quintal of barley and oats grain feed units is approximately 4 rubles, silage -- almost 5, and hay from annually sown and natural grasses -- approximately 8 rubles. As the saying goes, no further comment is necessary.

By way of confirming this thought, the deputy director for science at the North Kazakhstan Experimental Station, V. Ivanov, writes in the article entitled: "Zonal System of Farming": studies carried out at the experimental station and the practical work of farms throughout the oblast have made it possible to determine the optimum structure for the areas under crops, with emphasis being placed upon the best use of the arable land for grain and forage crops. Grain crops must occupy 64-65 percent, forage crops -- 20-22 and clean fallow 13-14 percent of the arable land. Naturally, the structure of a field may change depending upon the farm specialization. But this recommendation can serve as the foundation for the absolute majority of kolkhoses and sovkhoses specializing in grain production and having well developed meat and dairy animal husbandry operations.

The question of increasing the production of grain corn has arisen in a number of articles delivered to the editorial board. Truly, it is one of the republic's leading forage crops. It plays an especially great role in supplying the public livestock with succulent feed in the virgin land and northern oblasts. Owing to the natural-climatic conditions found in this zone, the best quality feed is obtained from the cultivation of early and medium-early hybrids and varieties. They ensure the greatest yield of dry substance and feed units. These requirements are most fully met by extensively regionalized hybrids and hybrid populations.

"However," emphasized the head of the Department of Seed Production at the Kazakhstan Scientific Research Institute of Farming A. Khafizov and the chief agronomist at the institute R. Shumilova in their article, "despite scientific developments and the definite experience accumulated by leading production workers, who are obtaining comparatively high seed yields from medium-early and mid-season ripening corn hybrids and hybrid populations, the seed production for these forms is developing at slow rates and this is creating a difficult situation with regard to meeting the seed requirements of the virgin land and northern oblasts. These

areas are still being supplied with seed for late ripening and non-regionalized hybrids and varieties and the feed being obtained is of low quality and has a negligible content of dry substance. One of the most important measures for improving seed production is that of raising the cropping power of the grain. This requires the extensive use in corn seed production of an industrial technology for cultivating it. Seed production sowings require first of all modern equipment, mineral fertilizers, herbicides and irrigation water. A requirement exists for raising the material interest of leaders, specialists, team leaders, machine operators and irrigation specialists, with regard to raising cropping power and increasing the production of seed corn, especially the early ripening and medium early forms."

In the article by the chairman of the Kolkhoz imeni Lenin in Enbekshikazakhskiy Rayon in Alma-Atinskaya Oblast S. Burdin, agronomists and scientific workers R. Taranovaya and A. Omarovaya at KIZ [Kazakh Scientific Research Institute of Farming], information is furnished on the experience of growing corn seed in the team headed by Mustafa Nazimov.

They are correct. The principal condition for obtaining good yields -- a high culture of farming, improvements in the agrotechnical methods, the introduction of new and highly productive hybrids and also the maintenance of high qualities in the seed and its standard characteristics during the seed production process. The team cultivates the hybrid corn population Kazakhstanskaya S-4 for seed purposes. The tilling of the soil commences with loosening of the stubble. Mineral fertilizer is applied at the time of spring plowing. The plowing is carried out to a depth of 27-30 centimeters, with simultaneous harrowing. Prior to sowing the field is treated with the herbicide Eradikan 6E (in a dosage of 7 liters per hectare), using POU and OVT-1 sprayers equipped with a field spraying boom and in assemblies with disk harrows. In this manner the herbicide mixes almost immediately with the soil to a depth of 10-12 centimeters. The sowing work is carried out during the second half of May, by which time the soil at the seed placement depth has warmed to 12 degrees.

During the growing season, one inter-row loosening combined with a top dressing is carried out in addition to ridging of the irrigation furrows. During irrigation, a top dressing of poultry manure is applied at the rate of 4 tons per hectare. In all, three waterings are carried out at the rate of 700-850 cubic meters of water per hectare.

"Foliar waterings of the furrows, which require a great amount of expertise on the part of the irrigation specialists, are carried out around-the-clock using a light spray; this makes it possible to dampen the soil without overflowing the ridges. Further improvements will be achieved in the corn cultivation technology by reducing the soil cultivations, combining operations and employing multiple-unit assemblies and highly effective herbicides which disintegrate rapidly" concluded the authors, "these are precisely the factors that provide the foundation for the industrial technology for cultivating corn"

In the "Basic Directions for the Economic and Social Development of the USSR During the 1981-1985 Period and for the Period Up To 1990," emphasis is placed upon the fact that a requirement exists for improving the quality of all types of feed and

concentrating efforts on solving the protein problem, mainly by expanding the production of soybeans and other high protein crops.

The All-Union Institute of Soybeans has developed a forecast for the development and production distribution of this crop by union republics and economic regions throughout the country (including in the Kazakh SSR) for the next decade. Soybeans will be grown on 1.6 million hectares. Moreover, it will be sown on 800,000 hectares of irrigated land.

The cropping power for this crop is also being planned.

"At the present time" writes S. Baydil'dina, a graduate student at KazSKhI [Kazakh Agricultural Institute], in an article addressed to the editorial board, "we are confronted with the problem of introducing mathematical methods into the economic structure, organization and planning for agricultural production. Our method is based upon the fact that the average cropping power for agricultural crops is an overall indicator of the effectiveness of agricultural production. For the purpose of greater trustworthiness, we developed six variants and an average and uniform cropping power emerged for soybeans, which has become the foundation for composing forecasting indicators. Computations have shown that by 1985 the cropping power of soybeans on farms throughout the republic will amount to 9.59 quintals and by 1990 -- 10.14 quintals per hectare."

"It should be emphasized that these are indicators of the average level and they can be increased considerably by a whole series of factors associated with scientific-technical progress, particularly the sowing of regionalized and highly productive varieties, the more extensive and skilled use of chemical and land reclamation resources and complex mechanization, specialization and concentration in the production of soybeans."

Many reserves are available for raising the cropping power and gross production of grain crops, particularly forage crops. It is the responsibility of the scientists and farmers to ensure that these reserves are placed in operation. Indeed, in his report delivered before the 26th CPSU Congress, Leonid Il'ich Brezhnev placed special emphasis upon the fact that close integration between science and production is an urgent requirement of this modern period.

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Solving Problems of Forage Grain

Alma-Ata SEL'SKOYE KHOZYAYSTVO KAZAKHSTANA in Russian No 10, Oct 81 p 44

[Article: "Forage Grain: Problems and Methods for Solving Them"]

[Text] In the fifth issue of the journal, a review of articles was published under the title "Forage Grain: Problems and Methods for Solving Them." In it, emphasis was placed upon the fact that in his report delivered before the 26th party congress, the general secretary of the CC CPSU Comrade L.I. Brezhnev stated: "In view of the fact that the requirements for bread grain are being satisfied completely, greater reliance must be placed upon the cultivation of forage grain crops. Their proportion with regard to the gross harvest of grain crops must be raised. Scientists and practical workers such as G. Seytkasimov, V. Ivanov,

A. Khafizov, R. Shumilova, S. Burdin, R. Taranova, A. Omarova and S. Vaydil'dina are introducing into operations a number of specific and business-like opinions and recommendations aimed at solving this task.

The chief of the Department of Grain Crops of the Main Farming Administration of the Ministry of Agriculture for the Kazakh SSR, G. Zverev, has informed the editorial board regarding the work carried out this year, at kolkhozes and sovkhozes throughout the republic, aimed at supplying animal husbandry with the required amounts of forage grain.

In his report delivered before the 15th Congress of the Communist Party of Kazakhstan, member of the Politburo of the CC CPSU and first secretary of the Central Committee of the Communist Party of Kazakhstan Comrade D.A. Kunayev emphasized that a strong feed base is required in order to achieve further improvements in animal husbandry. Prior to the sowing operations, the appropriate departments of the republic's Ministry of Agriculture, jointly with farming specialists in the various areas, examined and introduced improvements in the structure of the areas under crops. Additional land reserves were found. Special attention was given to expanding the barley sowings. As stated quite fairly in the article entitled "Forage Grain: Problems and Methods for Solving Them," this crop produces the highest yields. Thus it was sown on 6.3 million hectares, against a plan calling for 5.7 million. Oats were planted on 30,000 more hectares than originally planned and pulse crops -- on 20,000 more hectares.

As is well known, Kustanayskaya Oblast is one of the republic's leading oblasts in the production of products obtained from large-horned cattle. It has repeatedly emerged the winner in all-union and republic socialist competitions. The success achieved by the Kustanay animal husbandrymen has come about mainly owing to the concern displayed for laying in the required amounts of forage. This year the oblast's farms have expanded their barley grain fields by 150,000 hectares. During the winter the public livestock will be supplied with full-value concentrated feed.

This material found a warm response among the farmers in Aktyubinskaya Oblast. Here the sowing of forage crops was increased by 50,000 hectares above the figure for last year. It is possible at the present time to summarize some of the results. For example, the Pobeda and Proletarskiy Sovkhozes in Oktyabr'skiy Rayon have obtained 17 quintals of grain from each hectare of barley sowing. This is considerably more than the amounts obtained from tracts occupied by other grain crops.

A fine barley yield obtained in Alginskiy Rayon has enabled workers at the Sovkhoz imeni M. Gor'kiy to review obligations undertaken earlier and to deliver approximately 1 million poods of grain.

The farmers of other farms in the rayon have also undertaken raised obligations. The workers in Alginskiy Rayon have promised to supply the granaries of the homeland with 100,000 tons of grain, with a large portion of this figure being forage grain.

The harvesting of grain crops and the procurement of forage have been carried out successfully by the initiators of a republic competition for the organized and

high quality carrying out of harvest operations and grain procurements during 1981, by workers in Kuybyshevskiy Rayon in Kokchetavskaya Oblast and also by farmers in Tselinogradskaya and other oblasts.

Animal husbandry is today considered to be an important front for work in the rural areas. And success in solving the tasks confronting the farm workers is largely dependent upon the farmers themselves.

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LIVESTOCK FEED PROCUREMENT

LAGGING FEED BASE IN BALTIC AREA OF CONCERN TO PARTY

Moscow PRAVDA in Russian 23 Nov 81 p 2

/Article by D. Klenskiy, O. Meshkov and D. Shnyukas, PRAVDA correspondents, Lithuania, Latvia, Estonia: "The Feed Shop of the Baltic Area"/

/Text/ Meadows with fragrant mixed grass, fields producing quite good harvests of barley, rye, potatoes and root crops. All this creates good conditions for the development of animal husbandry--the traditional sector of agriculture of the Baltic Republics. In the light of the decisions of the 26th Party Congress and the November (1981) Plenum of the CPSU Central Committee the sale of meat and milk to the state will have to be increased considerably. The efforts of party, Soviet and economic bodies of the three neighboring republics are directed toward the strengthening of the feed base of farms.

The following statistics is not without interest: In Estonia, where the production of meat and milk increased 15.5 percent during the past five-year plan, the production of feed rose only 7.7 percent. There are approximately the same proportions in Lithuania and Latvia. Perhaps fodder began to be better used? No. Its expenditure per unit of output even increased.

The answer is simple. Farms in the Baltic Republics sharply increased the purchase of feed from state allocations. For example, last year it comprised one-third of the expended fodder. As a result, the proportion of concentrates on Latvian farms exceeded 48 percent, on Lithuanian farms, 46 percent and on Estonian farms, 56 percent. For imported feed kolkhozes and sovkhoses conscientiously pay the state with meat and milk. It is bad that here and there the vast capabilities of the local base are forgotten and sometimes feed production is curtailed without any justification.

We visited many rural areas in the three republics. We met field crop growers, milkmaids, herdsmen, agronomists, animal specialists, farm managers and party workers. Various reasons for the lack of success in the fodder field were mentioned. They include the lack of attention to land and to the crop structure.

Let us take grain crops. On the average, throughout the republics their harvest per hectare is now one-half of that on local advanced farms.

And what about meadows and flood plains--these invaluable sources of feed?

"Grass can meet almost two-thirds of the need of large-horned cattle for protein," says I. Aamisepp, Estonian SSR first deputy minister of agriculture.

A total of 35 to 40 quintals of hay per hectare of a cultivated meadow are gathered in Estonia. The yield is to be increased to 50 or 60 quintals by the end of the five-year plan. Farms in Lithuania and Latvia now gather 26 to 30 and from improved hayfields 19 to 20 quintals of hay per hectare. The areas sown with lucerne are also being expanded. However, its seeds do not ripen in the Baltic Area. The hope is that help will come from farmers in the country's southern regions. As yet it is occasional and insufficient. Apparently, it is necessary to carry out inter-republic cooperation with greater persistence.

In the Baltic Area, where the closed drainage network already occupies 55 to 70 percent of the land, land reclamation has greatly helped to increase the harvests of grass and of other crops. Nevertheless, its effect is insufficient. The developed systems, owing to their low quality, design miscalculations and poor operation, often cannot handle the discharge of water and the waterlogging of fields leads to a decrease in harvests.

"We have been carried away by the expansion of new areas and paid little attention to their skillful exploitation," says V. Normantas, head of the agricultural division of the Central Committee of the Communist Party of Lithuania. "Conclusions have already been drawn from this. During the 11th Five-Year Plan we will double the reconstruction and renovation of previously built systems."

In Latvia here and there the grass stand has deteriorated and valuable plants have died. Measures are taken to rectify the situation. Farms in Estonia are also engaged in the restoration of hayfields and pastures.

Well, as the saying goes, better late than never. However, these and some other facts make one think that some farms have ceased to value meadows. Much land is available here. If it is overgrown with shrubs and is not cleared in one place, the shortage can be made up for in another. Dozens and sometimes even hundreds of hectares of aftermath are snowed under--few people are bothered by this. Hay mowing should take 12 to 14 days. However, it lasts 1 month, 1½ months and longer.

Specialists pin great hopes on the green conveyer. It is supposed to regularly provide animals with feed from early spring to late fall. Here and there this has already been attained. On the Lithuanian Azhuolas Kolkhoz, the Latvian Tervete Kolkhoz and the Estonian Edazi Kolkhoz the set of crops is such that it makes it possible to harvest approximately 30 percent of the green fodder in spring, 40 percent in summer and 30 percent in fall. The production of meat and milk is growing there. To develop the green conveyer everywhere means to ensure a progressive and stable development of this sector. Meanwhile, on many farms in Lithuania milk yields were lowered, because grass stood too long and coarsened.

Up to one-third of the harvest is lost owing to the lack of observance of the technology of procurement and storage of feed. In Latvia last year losses of nutrients totaled about 100,000 tons of fodder units. In terms of output the republic failed to obtain about 80,000 tons of milk, or 10,000 tons of meat. A correct storage of silage and an addition of preservatives to it also have many potentials. On the

Estonian support-model Saku Sovkhoz such feed helped to increase the annual milk yield per cow by 420 kg, although it was sufficiently high there, that is, 4,000 kg. Specialists believe that in this republic alone a general storage of silage with preservatives would make it possible to additionally obtain 30,000 tons of milk. The increase throughout the Baltic Area will total about 120,000 tons.

It is a pity that as yet the industry supplies "miracle" preparations more or less tolerably only to Estonia. The localities search for their own resources. Latvia's industry began to manufacture preservatives in Olayne. There are possibilities of manufacturing formic acid at Ionava and Kedaynyay plants in Lithuania.

Let us take feed storage. What is obtained on meadows and fields can be lost without well-equipped capacities. Capacities for more than 1.5 million tons of haylage and silage were built in Lithuania during the past five-year plan. Patrons--collectives of industrial, transport and other enterprises--built almost one-half. In Latvia and Estonia farms are provided with storage facilities for silage and haylage at the rate of 75 to 78 percent, for hay, 60 to 65 percent and for root crops, 22 to 24 percent.

Hay harvesting also remains a bottleneck. Self-propelled wide-cut mowers proved their value on reclaimed fields. However, not all farms have such machines. There is a shortage of agitators, heavy freight carts and pickup trailers.

Nevertheless, it must be admitted that even the present state of the sector's material and technical base makes it possible to increase feed procurement and milk and meat production. The republic can be proud of its scientific potential and experienced specialists, who are capable of any economic and agrotechnical maneuver. Unfortunately, some farm managers and planning bodies to this day examine the ways of the sector's formation and development sporadically, do not approach them in an overall manner and have not gotten rid of such a disease as petty patronage of even experienced kolkhoz and sovkhos managers.

"Let them determine the volumes of deliveries of output for us. How to fulfill the plan is our concern," says P. Ramonas, chairman of the advanced Lithuanian Baryunay Kolkhoz.

However, as before, the number of livestock and the structure of crops are imposed on this and other farms. For the sake of satisfactory figures in reports at times livestock is kept too long, is underfed and feed is used for nothing.

It is well known to what this leads. For example, during the 10th Five-Year Plan, as compared with the preceding one, Estonian livestock breeders increased the stock of hogs 43 percent and output, only 30 percent. This is not surprising. During the indicated period fodder increased 38 percent.

In Estonia during the Ninth Five-Year Plan 5.34 fodder units were expended on the production of 1 kg of pork and during the 10th Five-Year Plan, 5.7. The profitability of output in the republic in the last 5 years has been lowered to one-half. This is the result of the excessive regulation of work in the localities. The decree of the CPSU Central Committee and the USSR Council of Ministers on improving the planning and economic stimulation of the production and procurement of agricultural products calls for great independence for kolkhozes and sovkhos in the solution of practical problems. This was once again noted at the November (1981) Plenum of the CPSU Central Committee. This important directive must be implemented persistently.

The interests of the cause also require giving up the planning of fodder in tons and quintals only and changing over to its recording on the basis of quality and nutritiousness. The value of full lofts of "late" hay or trenches of spoiled silage is not high. Some managers, in order to win the first place or a prize in a competition, keep grass too long in the field just so that the production volume may be bigger.

It has been estimated that, in order to obtain the amount of milk and meat envisaged for the five-year plan, farms in the Baltic Republics by 1985 must have 18 to 20 million tons of fodder units. The problems of development of the feed base of farms are in the center of attention of rural party members. Problems connected with the implementation of the envisaged program are discussed at meetings of primary party organizations, plenums and sessions of bureaus of rayon party committees and the central committees of the communist parties of the republics. For example, in October the state of affairs on the "feed front" was profoundly analyzed by the Plenum of the Central Committee of the Communist Party of Lithuania, which developed a set of measures for the further strengthening of the feed base.

Success in such an important matter depends primarily on the level of party guidance of the economy and the control and check of the execution of what has been envisaged. The Pyarnuskiy Rayon Committee of the Communist Party of Estonia thoroughly concerned itself with lagging farms and helped them to strengthen the feed base. The structure of fodder crops was gradually brought into line with the needs of animal husbandry. This is the result: As compared with the Ninth Five-Year Plan, the volume of milk production has now increased 20 percent and that of meat, 53 percent. Gratifying changes have taken place in Varenskiy Rayon in Lithuania, Yekabpilsskiy Rayon in Latvia and a number of others.

Nevertheless, by no means oversights have been eliminated everywhere. Recently, the Bureau of the Central Committee of the Communist Party of Lithuania criticized the Ignalinskiy Rayon Party Committee, where organizational work with livestock breeders and farmers was often replaced with speechifying. The number of decisions, which, in general, are correct and timely, is growing. However, the control over the establishment of a feed base, the systematic help in this matter for primary party organizations and farm managers and the responsibility placed on them are insufficient. Such shortcomings are noted in the activity of the Raplaskiy Rayon Committee of the Communist Party of Estonia and of the Tukumskiy Rayon Committee, in Latvia.

Feed is the basis for animal husbandry. Rural workers in the Baltic Area have considerable experience in its procurement and correct utilization. By systematically developing and strengthening the feed shop, they will make new advances in the development of animal husbandry.

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REGIONAL DEVELOPMENT

SCIENTIFIC APPLICATIONS FOR AGRICULTURAL DEVELOPMENT IN NONCHERNOZEM ZONE

Moscow SEL'SKAYA ZHIZN' in Russian 9 Dec 81 p 2

[Article by A. Glazkov and V. Fofanov: "Science and the Fields"]

[Text] A key problem of the Eleventh Five-Year Plan, as emphasized by Leonid Il'ich Brezhnev during the November Plenum of the CC CPSU, is the food problem. The foundation for solving this problem -- high rates for agricultural production. During this five-year period, it must be developed in the nonchernozem zone of the European part of the union at a considerably more rapid pace than has earlier been the case.

It is difficult to exaggerate the importance of this vast kray, which includes the nonchernozem zone of the RSFSR, Belorussia, the Baltic republics and the nonchernozem regions of the Ukraine, with regard to carrying out the food program. It is sufficient to state that the area of agricultural land here amounts to almost 70 million hectares, including more than 47 million hectares of arable land. Five thousand kolkhozes and more than 4,000 sovkhoses are concentrated in the nonchernozem zone of the Russian Federation alone.

In conformity with the decisions of the 26th party congress, the CC CPSU and the USSR Council of Ministers, in the decree entitled "Further Development and Improved Agricultural Efficiency for the Nonchernozem zone of the RSFSR During the 1981-1985 Period," outlined a broad complex of measures for further strengthening the logistical base and social development in the rural areas and for achieving a sharp increase in the production of agricultural products at kolkhozes and sovkhoses in this important region of the country.

In order to fulfill this program, a requirement exists for efficient utilization of the land, especially reclaimed lands, equipment, fertilizers and feed and improvements in the cropping power of the agricultural crops and in the productivity of the livestock. In carrying out the plans as outlined, a special role will be played by science.

The methods to be used for accelerating scientific-technical progress in agriculture in the nonchernozem zone, in light of the decisions of the 26th CPSU Congress, were thoroughly discussed during a traveling session of the All-Union Academy of Agricultural Sciences imeni V.I. Lenin, held recently in Smolensk.

In opening the session, the president of VASKhNIL [All-Union Academy of Agricultural Sciences imeni V.I. Lenin], Academician P.P. Vavilov, stated that the diverse nature of the soil, climatic and other conditions found in the nonchernozem zone require the use of a differentiated and strictly scientific approach for solving the problems associated with the development of agricultural production. A scientific-methodological basis is already available for this. The USSR Ministry of Agriculture, VASKhNIL and scientists in the nonchernozem zone, during the period following the appearance of the 20 March 1974 decree of the CC CPSU and the USSR Council of Ministers entitled "Measures for Further Agricultural Development in the Nonchernozem Zone of the RSFSR," carried out a great amount of organizational and scientific-research work. A branch of VASKhNIL for the nonchernozem zone of the RSFSR was created and is now in operation. Ten institutes and 24 experimental stations are subordinate to this branch.

Twenty five plant breeding centers, 12 for field crop husbandry and 13 for animal husbandry, performed work within the structure of leading institutes. The logistical base for scientific institutes has been strengthened and a great deal has been accomplished in connection with improving planning and coordinating studies. These and other measures have made it possible to carry out more efficient scientific research work. The principal trends have also been defined for the development and proper distribution and specialization of agricultural production in the economic regions.

Recommendations were prepared for a number of regions with regard to systems for the conduct of agricultural operations, with zonal farming systems being an important component element of the former system. The further development and introduction of these systems, by means of joint efforts, must ensure higher production efficiency and stability in the face of increasing output volumes, growth in labor productivity and the thrifty use of all resources.

All of this presupposes first of all the thrifty and rational utilization of the chief means of production -- land. The president and those participating in the session emphasized that the intensification of agricultural production in the nonchernozem zone is greatly dependent upon realizing maximum improvements in the fertility of the land. The example of Belorussia is rather instructive in this regard. This kray of swamps and sand is today being transformed into one of the most highly developed agricultural regions in the nonchernozem zone. Notwithstanding the complicated weather conditions experienced in recent years, the republic's average annual yield of grain during the past five-year plan amounted to 21.3 quintals per hectare, or greater by a factor of 1.6 than the figure for the Eighth Five-Year Plan, with the cropping power for potatoes and sugar beets reaching 159 and 243 quintals respectively. This became possible as a result of successful fulfillment of the program for land reclamation, the use of chemical processes and all-round production mechanization. Over a period of 10 years in Belorussia, lime was applied to 10 million hectares of acid soil and approximately 7 million hectares of water-logged land were drained. Considerable increases took place in the dosages for applying organic and mineral fertilizers per hectare of arable land. As a result, substantial improvements were realized in the agrochemical and physical properties of soils, their acid content decreased, the content of accessible phosphorus was raised by a factor of more than 1.5 and the humus content increased. As mentioned in the report delivered by academician-secretary of the Western Branch

of VASKhNIL T.N. Kulakovskaya, overall soil fertility throughout the republic was raised by almost twofold and the productivity of a hectare was increased by a factor of 1.5.

However, today only one tenth of the Belorussian kolkhozes and sovkhoses have a soil cover which meets the requirements for the modern culture of farming. This indicator is somewhat higher in Lithuania and Estonia, but it is considerably lower in a majority of the rayons in the nonchernozem zone of the RSFSR. Moreover, experience indicates that the yields obtained from low fertility lands are to a considerable degree at the mercy of unfavorable weather conditions. Thus, as emphasized in the speeches delivered by VASKhNIL Academician S.G. Skoropanov and the chairman of the Kolkhoz imeni Radishchev in Smolenskaya Oblast I.A. Denisenkov, work concerned with raising the fertility of soils by means of applications of increasing dosages of organic and mineral fertilizers, liming and other measures must be carried out on an immediate basis and in a planned manner.

The experience of Leningrad Oblast is instructive in this regard. Here, an average of 10 tons of organic materials were applied per hectare of arable land in 1975 and in 1980 -- twice as much. As a result, the area of low humus soils decreased by twofold.

Meanwhile, as noted in the speeches delivered by the chairman of the Presidium of the VASKhNIL branch for the nonchernozem zone V.M. Kryazhkov and others, the humus content in the soil in a majority of the republic's oblasts and autonomous republics in this zone even dropped lower.

It is difficult to exaggerate the role played by the liming of acid soils with regard to raising the effectiveness of use of fertilizers in the nonchernozem zone. This method of chemical reclamation makes all of the principal nutrients available to the plants. Thus liming must be carried out at a more rapid pace than the increases in mineral fertilizer deliveries. The coefficient of use for nutrients in these mineral fertilizers and also in organic fertilizers, by sowings, is still low.

During the years of the Tenth Five-Year Plan, at kolkhozes and sovkhoses in the nonchernozem zone of the RSFSR, 1.4 million hectares of drained and irrigated land were placed in operation and soil improvement work was carried out on an area of 1.9 million hectares. By the beginning of this year, the area of reclaimed agricultural land in the zone had reached almost 3.2 million hectares. However, the return being realized from reclaimed land is still not very great. At the same time, high results are being achieved on those farms within the zone where full use is being made of the achievements of the land reclamation and agricultural science and the proper technologies are being employed on the reclaimed lands. Thus the Povadinskiy and Dmitrovskiy sovkhoses in Moscow Oblast, the imeni Radishchev and imeni Pushkin kolkhozes in Smolenskaya Oblast, the imeni Kirov and imeni Kuybyshev kolkhozes in Kalininskaya Oblast and others are obtaining 30-35 and more quintals of grain per hectare, 500-600 quintals of root crops and 5,000-6,000 feed units per hectare of irrigated pasture.

During the Tenth Five-Year Plan, the scientific institutes developed and tested new designs for drainage-irrigation systems for use on mineral and peat-bog soils,

they carried out all-round studies and they prepared practical recommendations for soil improvement work to be conducted on a year-round basis. At the same time, the scientists still did not concentrate all of their efforts on solving the chief tasks in this work and, in addition, completeness and coordination were lacking in the studies carried out by the institutes of Minvodkhoz [Ministry of Land Reclamation and Water Resources] and the USSR Ministry of Agriculture.

The present five-year plan calls for the country's average annual grain yield to be increased by almost 35 million tons. A more worthy contribution must be made by the farmers in the nonchernozem zone of Russia, where the grain fields exceed 16 million hectares in area. In this regard, the role to be played by plant breeding and seed production is increasing as never before in the past. During the years of the Tenth Five-Year Plan, 44 varieties of grain crops were created and turned over to Gossortset' [State Strain Testing Network] by the scientific institutes of the VASKhNIL Branch for the Nonchernozem Zone of the RSFSR. Eighteen varieties of winter rye and wheat, barley, oats and spring wheat were regionalized during this same period. The overall area occupied by grain, pulse and groat crop varieties created by institutes of the branch amounted to approximately 10 million hectares in 1981. Extensive use was made of the Krasnoufimskiy-95 and Luch barley varieties and also of the Moskovskaya-35 and Leningradka spring wheat varieties.

Noticeable progress was achieved in raising the cropping power and lodging resistance of winter rye -- the traditional food crop for this region. New varieties appeared out on the fields -- Voskhod-1, Voskhod-2, Yaroslavna, Udarnitsa and also Chulpan. When cultivated on rich soil, their cropping power reaches 40-50 quintals.

"This year the nonchernozem zone has a group of varieties at its disposal that is considered adequate for obtaining much higher grain yields than the farms are presently obtaining" stated corresponding member of VASKhNIL E.D. Nettevich, "However, it must be admitted that they are still not satisfying the production requirements completely. Despite the fact that strain changing has been carried out, cropping power has increased all too slowly over the past few years. By no means have the farms undertaken all of the measures required for these intensive strains." The scientist emphasized the fact that the problem of optimizing the structure of the grain fields in the nonchernozem zone requires a great amount of attention. First of all, an optimum ratio should be established between the winter and spring crops. It is here that science has furnished specific recommendations. In particular, the spring grain crop fields should be studied in greater detail. Over the past few years, a sharp increase has taken place in barley sowings in the nonchernozem zone. This is a natural process. However, this positive trend in the expansion of the grain forage fields had adverse consequences. They soon began sowing barley on fields that were not very suitable for this biologically demanding crop. It is no secret that within the zone there are many acid and poorly cultivated soils. Naturally, the cropping power of the barley began to fall. It is because of this fact that many oblasts have reduced their barley sowings this year. They were reduced by 600,000 hectares in Tsentral'nyy Rayon alone. At the same time, the sowings of other crops were expanded. In the process, the selection of the crops was based upon the availability of seed rather than upon an ideal crop structure. Such fluctuations serve to disrupt the grain economy in the nonchernozem zone and make it more vulnerable and dependent upon the weather conditions.

During the session, mention was made of the fact that in recent years many farms in the nonchernozem zone have devoted less and less attention to raising their own high quality seed, preferring instead to rely upon industrial seed production and state resources. Large batches of seed are being imported into the zone almost annually from other regions of the country. This is bringing about a reduction in the proportion of regionalized varieties and, it follows, in lowered cropping power. In order to eliminate this extremely undesirable phenomenon as rapidly as possible, it will be necessary next year to make maximum use of available seed resources for the best regionalized varieties.

During the session, academicians N.G. Andreyev and B.P. Sokolov stated that we can raise still further livestock and poultry productivity and increase the production of milk, meat and other animal husbandry products simply by ensuring a guaranteed supply of full-value and cheap feed, in the required quantities and assortment, for the farms and complexes. Scientists attached to the VASKhNIL Branch for the Nonchernozem Zone of the RSFSR prepared recommendations for the intensification of feed production. They were defined more precisely in conformity with the natural-economic peculiarities of each oblast and autonomous republic and included as component parts of the scientific basis for the system of farming. Special attention is being given to expanding the sowings and increasing the cropping power of perennial grasses and pulse crops, improving the natural feed lands and to introducing into operations progressive methods for the procurement of feed and for the storage and correct use of such feed. Great importance is being attached to the introduction of highly intensive varieties for such crops as alfalfa, clover, reed fescue, awnless brome grass, cock's foot and others.

In view of the shortage in nitrogen fertilizers, a need exists for improving the structure of the sowing areas by expanding the sowings of clover, alfalfa and pulse crops and all sowings of oats and barley for feed purposes in pure form must be replaced by mixtures of them with pulse crops. As mentioned by the director of the All-Union Scientific Research Institute of Feed M.A. Smurygin, this will make it possible, by means of biological nitrogen, to lower considerably the feed deficit in farming in the nonchernozem zone and also the shortage in feed protein. In order to satisfy the minimal requirements of animal husbandry for feed protein, the pulse crop yields must be increased by a factor of at least 5 during the next few years, the areas used for peas, lupine and rape must be expanded considerably and within the structure for perennial grasses the sowings of clover and lupine must be increased to 60-70 percent or more.

Natural haying and pasture land constitutes a strong reserve for strengthening the zone's feed base. In the nonchernozem zone of the RSFSR alone there are 17.8 million hectares of such land, or 35.3 percent of all agricultural land in the zone. However, a large proportion of this land is in a neglected state. The feed yield being obtained from such land can only be raised by means of land reclamation. However, only 13 percent of the meadows have been improved and their cropping power continues to remain low. This is explained for the most part by the fact that fertilizers are usually applied to reclaimed meadows only during the year in which they are developed.

A strong reserve for increasing the amount of feed available is that of realizing improvements in the preservation and quality of the feed. More than 30 percent of

the feed is lost during harvesting, procurement and storage operations. Thus, maximum emphasis should be given to intensifying studies aimed at developing more improved technologies for the procurement, preservation and storage of feed.

Approximately 40 percent of the milk and more than 30 percent of the meat being obtained in the Russian Federation is produced in rayons of the nonchernozem zone. It was in these rayons that industrial technologies for producing animal husbandry products were first approved. It is here that large groups of agricultural animals having high genetic potential productivity are concentrated. During the years of the Tenth Five-Year Plan, the collectives of scientific institutes and plant breeding centers, in close collaboration with practical workers, developed an entire series of highly productive types and lines of agricultural animals.

At the same time, it was mentioned that as yet not all of the plant breeding centers are performing in an efficient manner. By no means is full use being made of the opportunities afforded by large-scale plant breeding operations; the breeding work is being limited to individual republics and oblasts in the zone. Meanwhile, vast amounts of valuable breeding resources have been accumulated in the Baltic region and in Moscow and Leningrad Oblasts, resources which could be employed extensively in other regions.

In the speeches delivered by participants in the session, emphasis was placed upon the fact that although the scientists had developed efficient feeding systems and standard rations, thus making it possible to achieve a high productivity, a good return from feed, preservation of the health of the animals and normal reproduction for them, nevertheless the volumes for these systems and rations being introduced into production operations are still not very great. The production of coarse, succulent and green feed is still increasing at a very slow rate and this has resulted in an over-expenditure of grain, especially in the feeding of large-horned cattle. The feed protein deficit is great and it is bringing about a reduction in productivity and an increase in feed consumption per unit of output. In this regard, a priority task of the scientific institutes in the nonchernozem zone is that of developing an all-round and interrelated program for feed production and animal husbandry, in conformity with the specific conditions prevailing in each autonomous republic and oblast. A principal task is that of converting animal husbandry over to industrial technologies, since at the present time labor resources in the nonchernozem zone are limited and the demographic situation is expected to become even more complicated in the future.

Based upon these positions, comprehensive discussions took place on those problems associated with the all-round mechanization, cultivation, harvesting and storage of the zone's leading crops -- flax, vegetables, potatoes and also forage crops. A number of vital problems were reviewed in the speeches delivered by VASKhNIL academicians A.A. Nikonov, M.N. Sinyukov and others: social development of the rural areas, proper utilization of logistical resources and also the training and retention on farms in the nonchernozem zone of machine operators and specialists who must serve as active proponents of scientific-technical progress in agriculture.

During the session, speeches were delivered by the deputy chairman of the Council of Ministers for the RSFSR A.V. Aleksankin, the first secretary of the Smolenskaya

Oblast CPSU Committee I. Ye. Klimenko and the directors of a number of scientific research institutes and experimental stations.

The participants in the session adopted a decree concerning the problems discussed.

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AGRO-ECONOMICS AND ORGANIZATION

PRIVATE SECTOR IMPORTANT PRODUCTION SOURCE IN MOLDAVIA

Kishinev KOMMUNIST MOLDAVII in Russian No 9, Sep 81 pp 76-80

[Article by I. Bodur, candidate of economic sciences and deputy chairman of the administration of Moldavpotrebsoyuz: "Private Plots -- Substantial Assistance in the Production of Products"]

[Text] The private plots of kolkhoz members and manual and office workers are an indispensable part of socialist agricultural production and the solving of those problems associated with their further development from an economic, social and educational standpoint is of great importance with regard to the successful implementation of the food program. During the 26th CPSU Congress, Comrade L.I. Brezhnev emphasized that "the foundation for socialist agriculture has been and continues to be the kolkhozes and sovkhoses. But this is by no means meant to imply that we can neglect the potential of the private plots. Experience testifies to the fact that such farms can be of substantial assistance in the production of meat, milk and certain other products. The orchards, gardens, poultry and livestock which belong to workers constitute a part of our overall wealth."

As is well known, a private plot is socialist in nature; it is operated by workers engaged in socialist production, it is based upon their personal labor and it is associated with public production by means of reproductive contacts. On such a plot, which manifests itself as being secondary to the principal public endeavor, private, collective and national interests are reflected.

The national interests are expressed through the relationships of a private plot with the state and they derive from the fact that a portion of the national income is produced here, with the output of the private plot becoming one of the sources for the flow of the required food products and agricultural raw materials.

The collective interests are manifested in the relationships of a private plot with agricultural and other enterprises and consumer cooperation. Experience has shown that a sharp reduction in the output of the private economy can serve to bring about a slowdown in the development of agriculture proper. A reduction in the production of animal husbandry or field crop husbandry products in this sector of the economy leads to a situation wherein the public farms are required to maintain a large number of additional livestock, expand their sowings of diverse field crops and consequently increase their number of farm and field workers.

Private interests serve as the driving force in the management of the private economy, since it is here that the rural families obtain a considerable portion of the food products they consume and also the income required for satisfying their needs. A substantial proportion of this output is marketable and is used for satisfying the needs of people not engaged in agriculture. For the country as a whole, the private economy produces approximately 25 percent of the total income of a kolkhoz member's family. Nevertheless, in order to evaluate a private plot correctly, one must bear in mind that it has many and diverse contacts with public production and that the livestock being maintained on a private basis are supplied with feed obtained from areas that are considerably larger than the private plots. These are haying and pasture lands and areas required for the production of feed, with the feed being sold and distributed by a public farm based upon the labor performed at that farm. In other words, the effectiveness of such plots is dependent upon how completely the kolkhozes and sovkhoses satisfy their requirements for production implements, feed, young livestock and poultry and planting and sowing materials.

In a number of decisions handed down by the party and government, mention was made of the fact that within the overall system of measures aimed at increasing the production of agricultural products, more extensive use should be made of the opportunities afforded by the private plots, with emphasis being placed upon the need for providing them with maximum assistance. Such assistance is required in particular in those areas where livestock and poultry fattening work is being carried out. During the 26th CPSU Congress, attention was directed to the need for "providing assistance to kolkhoz members and sovkhos workers in the form of young stock and feed. This applies to those who maintain their own private livestock and also to those who are prepared to raise livestock belonging to kolkhozes and sovkhoses."

The decree of the CC CPSU and the USSR Council of Ministers entitled "Additional Measures for Increasing the Production of Agricultural Products on the Private Plots of Citizens" is opening up a broad expanse for the development of private plots. In accordance with this decree, sovkhoses and other agricultural enterprises are authorized and it is recommended that kolkhozes conclude, on a strictly voluntary basis, agreements with kolkhoz members, manual and office workers and other citizens who reside on their territories and who participate conscientiously in the work of the collective and also with pensioners, for the raising and procurement of livestock and poultry and for the procurement of surplus milk. It has been established that output procured on the basis of these agreements is sold to the state by these plots and is counted in their overall production volume and towards fulfillment of the state plan for procurements, with the established bonuses being paid based upon the quantitative and qualitative indicators.

The private plots in our republic are making a worthy contribution towards the overall production balance for agricultural products. Here the average annual production of potatoes amounts to approximately 300,000 tons, vegetables -- 100,000 tons, corn -- more than 226,000 tons, grapes -- 230,000 tons, meat in dressed weight -- 57,000 tons, milk -- 212,000 tons, eggs -- 280 million and wool -- 1,300 tons.

This sector of the republic's economy is described most completely by the following data: the private plots of kolkhoz members and manual and office workers consist of 187,900 hectares of land, 174,800 head of large-horned cattle, including 110,400 cows, 210,100 head of swine and 545,800 head of sheep and goats. And this means that the state does not have to supply the rural population with those products which it is obtaining from private plots. An opportunity is presented for maneuvering the centralized food fund on a more extensive scale.

In this regard, considerably greater importance is attached to the role played by consumer cooperation workers, who must expand business-like contacts with the population and promote in every possible way an increase in the procurements of surplus agricultural products. During the past five-year plan, considerable quantities of potatoes, fruit, eggs, wool and other products were procured from the population through the Moldavpotrebsoyuz system in behalf of fulfillment of the state plan. In addition, such products as meat, honey, potatoes, grain and others were also procured for the commission trade in cities and workers' settlements. In all, products valued at 164 million rubles, compared to a plan calling for 157 million rubles worth, were sold during the past five-year plan through the commission trade.

The administration of Moldavpotrebsoyuz has developed a system of measures for furnishing assistance to the owners of private plots in the production of fruit and vegetable and animal husbandry products. These measures are based upon agreements which call for the procurement of all surplus products from the population. The types, volumes and delivery schedules are stipulated in these agreements. The drawing up of agreements is laborious work and it requires great organizational talents and the extensive use of instructional means among the population. Importance is attached to creating a definite social climate, one in which the kolkhoz members and sovkhos workers would sense that they are performing a useful service for society by raising livestock, poultry, vegetables and fruit on their private plots.

These goals are served by rural gatherings and expanded meetings of the executive committees of village soviets of people's deputies, during which detailed discussions are held on problems concerned with improving the management of the individual plots. In addition, rural salesmen, the members of cooperative commissions and activist-shareholders are enlisted for the carrying out of explanatory work.

For the first time this year, in villages throughout the republic, authorized representatives were elected from among the cooperative aktiv and assigned responsibility for 15-20 farmyards. Here they provide assistance to the owners of the plots in correctly determining the group of crops to be cultivated and in making proper use of the land. Actually, the private plots are developing on a single-crop basis. In the northern zone of the republic, orchards, grain forage crops and potatoes predominate and in the southern and central zones -- grapes. Obviously, this is adversely affecting the balance in food resources by zones. It is not surprising that some regions are experiencing an acute shortage of vegetables and potatoes. Meanwhile, computations reveal that if the sowing areas for vegetables were distributed in a uniform manner and increased to 15 percent of the overall amount of land in private use, it would be possible to obtain approximately

180,000-190,000 additional tons of vegetable products. Proper management of the areas occupied by potatoes could produce a high increase in the yields for this crop. An increase in the sowings of grain forage crops could play a great role. An increase of just 5 percent in these crops would make it possible to produce approximately 6,000 additional tons of pork.

The work being performed by a council of representative shareholders, created in all villages throughout the republic, is directed towards achieving these goals. In carrying out their work, they receive extensive assistance from the village soviets of people's deputies, the local party organizations and from the economic organs. The representative shareholders, jointly with the workers from procurement offices, make the rounds of all of the farmyards in the zone being served, define more precisely with the owners of the plots the list of crops sown, determine in advance their cropping power and reach agreement on the quantities and schedules for output sales, on the location for accepting the products and on the accounting method to be employed. At the present time, more than one half million such contractual agreements have been concluded. This system is advantageous to both sides: the supplier is assured of a market for his products, since the procurement organization guarantees unhindered acceptance and payment at the site. At the same time, this exerts a positive effect on the overall course of procurements and it enables the cooperation specialists to satisfy more completely the food requirements of the people. This year the plans call for 39 million rubles worth of surplus agricultural products and raw materials to be procured from the population. Distinct from past years, the procurement offices are accepting all products this year -- standard and non-standard. The former is being shipped to industrial centers of the country where it will be supplied to stores and the latter is being processed at canning enterprises of Moldavpotrebsoyuz.

The council of representative shareholders, jointly with village and settlement soviets of people's deputies, is organizing a competition for the best management of a private plot. The winners are awarded monetary prizes and sel'po [rural consumer cooperative society] diplomas. The administration of Moldavpotrebsoyuz has announced a competition (republic) for the exemplary management of a private plot, by zone of activity for an individual sel'po. The chief condition for this competition is a wide assortment and volume of goods sold and also active participation by the suppliers in public production. Counter sales have been organized in all areas for high-demand industrial goods: construction materials, cement, motorcycles and fur products.

Many examples could be cited revealing the harmonious development of the private plots, with all types of livestock and poultry being maintained and with many agricultural crops being cultivated. In the village of Pervomayskiy in Drokiyevskiy Rayon, there are 750 farmyards. Here there are 700 head of large-horned cattle, 600 swine, 9,000 head of poultry and 12,000 rabbits being maintained. Each year the procurement offices in Slobodzeyskiy Rayon purchase 200,000-250,000 rabbit pelts and this means that approximately 3,000 tons of dietetic meat were produced on the private plots during the years of the past five-year plan. On the private plot of Sergey Kukulesku in Floreshtskiy Rayon, there is 1 cow, 2 swine, 5 sheep, 80 head of poultry and 250 rabbits. The family is being supplied fully with food products and the surplus products are being sold to the state by means of cooperation.

Experience testifies to the fact that in those areas where the party, soviet and professional trade union organs actively assist the population in acquiring private plots, increases are noted in output production with considerable quantities being supplied to the procurement points. Thus in Drokiyevskiy, Dondyushanskiy, Faleshtskiy and Ryshkanskiy Rayons, the kolkhozes and sovkhoses are providing substantial assistance to the private plots in the form of succulent and coarse feed and in zooveterinary services. Thus there are 12,000-13,000 head of large-horned cattle being maintained on a private basis in each of these rayons. The population in villages and settlements in Orgeyevskiy Rayon annually raise up to 10,000 swine, while at the same time in the neighboring Kriulyanskiy Rayon -- only 5,000-6,000. The status of affairs in private plot sheep raising is arousing special concern. As is known, this branch produces wool, astrakhan pelts, sheep cheese and meat, that is, products and raw materials for which the state has an extreme need. Here too, contrasts are being observed. Thus, more than 60,000 sheep are being raised on private plots in Ryshkanskiy and Faleshtskiy Rayons. This is as many sheep as are being maintained in Grigoriopol'skiy, Dubossarskiy, Kamenskiy, Kriulyanskiy, Kutuzovskiy, Novoanenskiy, Oknitskiy, Rezinskiy, Strashenskiy and Suvorovskiy Rayons taken together. As the saying goes, no further comment is necessary. Forecasting computations reveal that if one young pig and two female rabbits are maintained in each rural farmyard and if there is one head of large-horned cattle for every two such farmyards, then during the Eleventh Five-Year Plan this sector of the economy will be able to produce approximately 450,000-470,000 tons of meat.

An important reserve for supplementing the food resources is that of collective horticulture and gardening, with the municipal population being supplied with hundreds of thousands of tons of different type products. In addition to these advantages, the organization of horticultural and gardening solves a number of social problems. Here city-dwellers improve their health by working on weekends and during vacation time out in the fresh air. Their children and juveniles also participate in this work. Beyond any doubt, this promotes the retention of personnel at the enterprises and it raises production discipline, since quite often the tracts of land are made available as incentive for good work performed. Unfortunately, this form for attracting manual and office workers throughout the republic to participating in farm work is not being employed extensively throughout the republic, even though such opportunities exist and tracts of land which cannot be employed by the kolkhozes and sovkhoses are available for use.

However, there is one disturbing factor. The private plots and collective orchards and gardens are not being supplied by industry with the quantities of mechanical orchard equipment and manual orchard-gardening implements required. Sheep shearing machines are not available for sale. Taking into account the experience of socialist countries and especially in the VNR [Hungarian People's Republic] and GDR, pools of miniature tractors and motorized carts with power ratings of 10-15 horsepower should ideally be created.

In the interest of raising agrotechnical knowledge, we are of the opinion that a committee of specialists should be created within each village soviet of people's deputies for the purpose of providing the owners of private plots with skilled recommendations on the agricultural practices to be employed in the cultivation of a particular crop. Today the state agricultural enterprises are authorized to

introduce into operations the positions of deputy sovkhos director and kolkhoz chairman or specialist for matters concerned with the management of private plots. The recommendation has been made for kolkhozes to institute the latter positions. The opinion has already been expressed in the press that these actions are deserving of implementation.

For the successful development of the private economy, great importance is attached to achieving a correct solution for the problem of housing construction, since a particular type of home may not provide a suitable link between an apartment and a plot. In a number of rayons throughout the republic, these problems are at times being solved without taking into account the specific peculiarities of the rural tenor of life. Members of kolkhozes and sovkhos workers do not settle willingly into multi-story buildings where, as a rule, all of the economic services are combined into units which are located at some distance from the housing unit. The same applies to the private plot. Life forces the opinion that it is more convenient for a peasant to live not in a five-story building but rather in a single-story building with an adjoining plot.

The private economy is a feasible form for combining public and private interests. The skilful utilization of the opportunities afforded by private plots and household farms will be of great aid in supplementing the country's food resources and raising the welfare of the Soviet people.

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AGRO-ECONOMICS AND ORGANIZATION

SCIENTISTS CONFER ON EFFECTIVE MANAGEMENT OF AGRICULTURE

Moscow SEL'SKAYA ZHIZN' in Russian 29 Nov 81 p 2

/Report on session by I. Gorlanov: "Basis for Efficient Management on Land"/

/Text/ Scientists of the All-Russian and Siberian Departments and of the Department of the All-Union Academy of Agricultural Sciences imeni V. I. Lenin for the Nonchernozem Zone are discussing the ways of improving and increasing the efficiency of agricultural management systems.

Rural workers received the decisions of the November (1981) Plenum of the CPSU Central Committee and of the session of the USSR Supreme Soviet and Comrade L. I. Brezhnev's speech at the plenum as documents of a great inspiring and mobilizing force. They are imbued with concern for the further rise in the people's well-being and determine the ways and means of reaching new heights in communist construction.

As L. I. Brezhnev stressed at the Plenum of the CPSU Central Committee, the food problem is the central problem of the 11th Five-Year Plan both in economic and political terms. On L. I. Brezhnev's initiative an overall food program is being developed in the country. It is to combine efforts both in agriculture itself and in other sectors of the agroindustrial complex and to subordinate all work to the common ultimate goal--meeting the country's needs for food. High rates of agricultural production are the main conditions for the accomplishment of the task set.

The ways of further increasing the production of grain, feed, milk, meat and other farm and livestock products on the basis of the development and introduction of scientifically substantiated systems of agricultural management were discussed in detail at the joint session of the All-Russian and Siberian Departments and of the Department of the All-Union Academy of Agricultural Sciences imeni V. I. Lenin for the Nonchernozem Zone of the RSFSR held a few days ago.

It was noted in the reports by academician N. P. Fedorenko, A. A. Nikonov and I. S. Shatilov, academicians of the All-Union Academy of Agricultural Sciences imeni V. I. Lenin, V. R. Boyev and V. I. Nazarenko, corresponding members of the All-Union Academy of Agricultural Sciences imeni V. I. Lenin, and I. I. Letunov, deputy chairman of the Department of the All-Union Academy of Agricultural Sciences imeni V. I. Lenin and in the speeches by other scientists and specialists that modern science and advanced practice arm rural workers with an ever greater arsenal of equipment for an increase in the fertility of fields and in the productivity of agricultural plants and farm animals and with advanced methods of organization and

management of production. The accumulated experience in the development and introduction of agricultural management systems in the natural-economic zones of the Russian Federation was analyzed and the ways of further improving and efficiently using them were outlined.

It was stated at the session that the agrarian sector of the RSFSR economy will make significant advances during the current five-year plan. Considerable growth should be attained in the production of grain, sunflowers, vegetables and potatoes. Special attention will be paid to an increase in items whose shortage causes interruptions primarily in the supply of meat, milk and other livestock products for the population.

In order to ensure the accomplishment of the tasks set, extensive work on the development and introduction of scientifically substantiated systems of agricultural management in all natural-economic zones is done in the republic. Scientists, as well as specialists of kolkhozes, sovkhoses and agricultural bodies and many rural workers, take an active part in this important work.

Recommendations on systems of management of farming, animal husbandry and other sectors of agriculture were also previously worked out for natural zones. Of course, they provided some help to rural workers. As a rule, however, they were of a descriptive, basically technological, nature and were not coordinated. Therefore, their effect on the results of agricultural production was obviously insufficient. Now it is a question of development and execution of unified systems of management of agriculture as a whole in republics, krais and oblasts, as well as in rayons and farms, on the basis of the generalization of the data of science and advanced experience. Therefore, they should be based on a weighed consideration of the entire set of agroclimatic, biological, technical, organizational-economic and social factors as applied to local conditions.

In principle, such systems should become models of an efficient management of agricultural production at the appropriate level--kolkhoz, sovkhos, rayon, oblast, kray and republic--and ensure a systematic increase in the volumes of output and the saving of labor and material resources.

The system, overall approach to the organization of management on land is already being implemented in practice in a number of places. In particular, it was noted at the session that the introduction of an overall agricultural management system developed with due regard for the soil-climatic and other characteristics of individual zones has had a highly positive effect on the development of farming and animal husbandry in Stavropol'skiy Kray in the last few years.

Applying the developments of scientists and improving the organization of production, labor and management, rural workers in Stavropol' under the difficult conditions of the dry steppe were able to minimize the negative effect of unfavorable weather conditions, to greatly increase the yield of agricultural crops and to make it more stable. On the average, during the 10th Five-Year Plan they annually gathered 23 percent more grain than during the Ninth Five-Year Plan. This year, which is very dry, they also greatly overfulfilled their obligations for the sale of grain to the state.

An overall program for the development of agricultural production in Omskaya Oblast has been worked out and is being implemented purposefully. In its natural conditions Omskaya Oblast is located in the zone of so-called "risky farming," where often the annual amount of precipitation is less than 300 mm. Nevertheless, a systematic introduction of scientifically substantiated agrocomplexes in combination with other organizational-economic measures enabled the oblast's farmers to increase the average annual grain production by more than 20 percent in the last 5 years. A. M. Koval'chuk, secretary of the Omskaya Oblast Committee of the CPSU, said at the session that, concerned with the establishment of a large production base in rural areas and improvement in the social and domestic conditions of rural workers, the oblast party organization pays much attention to problems of an efficient utilization of land, increase in its fertility, improvement in seed growing and acceleration of the introduction of highly productive varieties. Special significance is attached to the development of models of overall technological solutions as exemplified by experienced and base farms, which exist in every rayon. Personnel is trained on the basis of their experience. In all rayons chief kol-khoz and sovkhoz specialists defend the plans for the introduction of the achievements of science and advanced experience. These plans are then examined in the oblast executive committee.

Under present conditions the development of agriculture is in great need of scientific and technical solutions capable of fundamentally transforming production and making it more dynamic and less dependent on the whims of the weather. In connection with this the session paid special attention to ensuring an overall nature in the elaboration of agrarian problems and to organizing research on object programs.

Russia's scientific institutions are engaged in the elaboration of many problems. However, as noted at the session, such vital problems as the specialization and concentration of production, interfarm cooperation, formation of the agroindustrial complex, improvement in the methods of organization and management of production and a number of others have not yet been properly worked out.

It was pointed out that some scientific collectives still work without the proper return and do not have a significant influence on the state of affairs in the corresponding sectors. For example, serious complaints were made against the scientists of the Scientific Research Institute of Potato Economy. At this institute advanced technologies of potato cultivation and harvesting are poorly developed and breeding work lags. Breeding work has also been weakened at the Scientific Research Institute of Agriculture of the South-East, especially work on winter wheat, barley and sunflowers.

Breeders of the All-Russian Scientific Research Institute of Sugar Beets and Sugar imeni A. L. Mazlumov have not yet produced good varieties and hybrids of intensive-type sugar beets. But it is well known that without good one-seed hybrids, in practice, it is impossible to cultivate this crop according to the industrial technology. The most rapid elimination of these gaps is one of the key tasks of the regional departments of the All-Union Academy of Agricultural Sciences imeni V. I. Lenin.

The most acute problems will have to be solved in animal husbandry. Now this is the shock front in rural areas. The 26th CPSU Congress determined this. Therefore, for scientists and specialists the range of work is especially wide here, that is, from strengthening the feed base and developing highly productive, new breeds of animals to working out the most productive and efficient technological and organizational solutions.

It was stated at the session that a great deal was done during past years. A total of 6 breeds, 13 pedigree types and 83 lines of farm animals with high indicators of productivity were developed during the 10th Five-Year Plan alone and, as a result of an extensive use of artificial insemination of cows, the population of purebred large-horned cattle increased 3.5-fold in the last 10 years. Extensive work was done on the development and introduction of industrial technologies of milk, beef and pork production and on the breeding of young replacement stock.

However, it was noted at the session that many important problems of animal husbandry development need a profound overall scientific study. In particular, there are no substantiated recommendations on optimal sizes of large farms and complexes and on the optimization of pedigree regionalization and correlation of animal husbandry sectors in zones. All these developments should form part of the system of management of animal husbandry as an organic component of the general agricultural management system in an oblast, kray, rayon and farm.

It was noted at the session that the establishment of an economic interconnection between scientific research institutes and agricultural enterprises maximally contributing to an accelerated elaboration of scientific problems and their movement to production is of great importance for science and practice. In accordance with this requirement it is necessary to develop thematic plans for every scientific institution. They should most fully meet the urgent needs of agricultural production and envisage all the stages--from research to introduction.

Agriculture is the basic link of the agroindustrial complex. Therefore, the participants in the session paid much attention to problems of improvement in the economic mechanism and in the system of management both in agriculture itself and in the agroindustrial complex as a whole. The participants in the session especially approved of Comrade L. I. Brezhnev's words to the effect that it is necessary to create conditions that would stimulate in every possible way the growth and increase in the intensity of production and the initiative of kolkhozes and sovkhozes.

With what to occupy a hectare? When to begin certain operations? In these cases the farms themselves should have the decisive word. It was stated that it is necessary to put an end to a situation in which many kolkhozes and sovkhozes suffer losses, while the organizations servicing them obtain profit and bonuses.

With regard to agricultural management systems they should become the basis for an efficient management on land. The obligation of all management links and planning bodies is to strictly observe them. Their parameters and requirements should be taken into consideration in all the spheres of the agroindustrial complex.

M. S. Solomentsev, candidate member of the Politburo of the CPSU Central Committee and chairman of the RSFSR Council of Ministers, spoke at the session.

In the adopted decree the participants in the session mapped out specific measures to ensure the development and introduction in krays, oblasts and autonomous republics of zonal and microzonal agricultural management systems designed for the attainment of high rates of growth of the production of farm and livestock products with a simultaneous decrease in their production costs.

11,439

CSO: 1824/91

AGRO-ECONOMICS AND ORGANIZATION

PRIVATE PLOT POULTRY CONTRACTS IN GEORGIAN SSR DISCUSSED

Moscow SEL'SKAYA ZHIZN' in Russian 22 Nov 81 p 3

[Article by V. Zavradashvili, director of the Kaspi Interfarm Broiler Poultry Farm, Georgian SSR: "By Agreement With the Population"]

[Text] Our Kaspi Interfarm Broiler Poultry Factory is a meat specialty reproduction facility of the second rank; it produces 2.3 million pedigree eggs and 150 tons of poultry meat annually.

The enterprise is small and further development of it requires considerable capital investments. In our search for production reserves, we hit upon the thought of achieving cooperation with the private plots of the population. A standard contract was prepared, one which sets forth the mutual obligations of the poultry factory and its partners -- the heads of rural families. Such contracts are concluded mainly with families which are associated with public production or which include pensioners, invalids or mothers of many children.

As yet, only a few such contracts have been concluded. The work is only beginning. But the initial results are very promising.

In conformity with a contract, we provide a family with day-old chicks free of charge. As a rule, from 500 to 1,000. We also provide feed free of charge at the rate of 3 kilograms per head and we furnish appropriate zootechnical-veterinary assistance. The duration of the raising period is 70 days. Natural losses amount to 20 percent. For each 100 chicks raised, we credit our partners with 5 man-days for computing labor expenditures. The contract calls for a family to turn over to the factory 70 percent of the poultry raised. The weight of each broiler must be no less than 1 kilogram. Thus we leave the participant in cooperation, in the form of a supplementary bonus, 10 percent of the poultry originally received as payment in kind. At final settlement, we pay 1 ruble for a kilogram of meat in live weight as payment for the labor performed.

What does our contractual partner receive as a result of his work? Allow me to cite an example. Over a year's time the family of housewife B. Peykrishvili raised 2,350 chicks and it received 1,664 rubles upon delivering 1,664 kilograms of poultry meat to the factory. The additional income received in the form of a supplementary bonus, as payment in kind, amounted to roughly 700 rubles. This family has just accepted 1,500 more day-old chicks.

The factory has already received 17 tons of additional poultry meat this year as a result of cooperation and this figure is expected to increase to 40 tons by the end of the year. The enterprise realizes a net profit of 50 kopecks for each kilogram of meat sold to the state.

Recently we were provided with a standard contract for cooperation which has been approved by the ministries of agriculture, procurements and finances and by the USSR CSA. It opens up broad prospects for developing the production of animal husbandry products. However, it is believed that the profitability from raising poultry under domestic conditions, formed in conformity with this contract, is too small -- it amounts to only 13-15 percent. Our profitability ranges to 40-45 percent. By no means is the state the loser in the case of these contracts. Rather, rural families display greater interest in cooperation when our method is employed.

* * *

Comments by the republic's Gruzptitseprom Production Association, V.I. Gvardzhaladze:

The Kaspi Interfarm Broiler Poultry Factory is not the only enterprise of the association that has concluded a contract with the population. Similar work is being carried out by four more poultry farms, located in various areas of the republic.

Unfortunately, the requests are exceeding the potential of the broiler factories; they do not have adequate quantities of broiler incubation eggs. Thus we are encouraging poultry factories specializing in the production of eggs to participate in this cooperation. The initial steps have been taken in this direction at the Khashury, Medzhviskhevskaya and Mayakovskiy factories. The parental stock for meat poultry is being created at the Noriyskaya Poultry Factory and a parental zone is being built at the Kaspi, Kindgskaya and Kodiyskaya poultry factories.

These and other measures are making it possible to obtain more than 5,000 tons of poultry meat annually from the population on a cooperative basis.

7026

CSO: 1824/082

TILLING AND CROPPING TECHNOLOGY

INTRODUCTION OF NEW GRAIN CROP VARIETIES IN SIBERIA

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 9, Sep 81 pp 15-22

[Article by K.G. Aziyev, candidate of agricultural sciences and director of the Western Siberian Plant Breeding Center, Siberian Order of the Red Banner of Labor Scientific Research Institute of Agriculture: "Experience in the Introduction of New Grain Crop Varieties in Siberia"]

[Text] During this modern stage in agricultural development, with noticeable improvements taking place in the culture of farming as a result of introduction of the soil protective system, an increase in the proportion of fallow and fertilizer applications, the most practicable reserve for raising the cropping power of grain crops is that of substituting new and more productive varieties for older ones. This applies in particular to Siberia, where the grain economy over an extended period of time has been conducted on the basis of low productivity varieties of the extensive type such as Skala, Lyutestsens 758 and Saratovskaya 29 spring wheats, Omskiy 13709 barley and Pobeda and Zolotoy Dozhd' oats, which clearly do not meet the requirements for agricultural production and which are restraining further growth in the gross yields of grain. A persistent need has arisen for substituting new and highly productive varieties for older and less productive ones. At the same time as the second variety changing in winter wheat was being completed in the European portion of our country over the past 20 years, in Siberia only the first variety changing in spring wheat, the principal food crop for this region, is being planned.

During the 1970's and simultaneous with the organization of plant breeding centers, some improvements were achieved in the creation of new varieties. Commencing in 1979, more improved varieties were recommended for introduction on an extensive scale, with a considerable proportion of these varieties having been created by local plant breeding institutes (varieties of SibNIISKhoz [Siberian Scientific Research Institute of Agriculture], for example Omskaya 9, Irtyshanka 10 and Almaz spring wheat, Omskiy Korm voy 1 oats, Omskiy 7 peas, Omichka vetch and Omskoye 5 and Irtyshskoye millet). The Omskaya 9 intensive type spring wheat variety, which possesses a high resistance against lodging and which has a potential cropping power of 65-70 quintals per hectare, is recommended for introduction in the steppe and forest-steppe regions and 10 oblasts and krays in Siberia and also in northern Kazakhstan. Owing to its high economic-biological indicators, the Almaz durum wheat variety has been regionalized in Omskaya, Kokchetavskaya, Kurganskaya and Kustanayskaya Oblasts, in Altayskiy Kray and in Tatarskaya ASSR.

However, the new varieties are still being introduced into operations on kolkhoz and sovkhoz fields in an extremely slow manner. In 1980, their proportion in Kurganskaya Oblast was 55 percent, Omskaya Oblast -- 41 percent and in Altayskiy Kray -- 23 percent. In terms of cropping power, the proportions were roughly the same. In Siberia, the introduction of a new variety usually requires from 5 to 8 years following its regionalization and if one takes into account the fact that 3 years of testing took place at a scientific-research institute prior to regionalization, with Gossortset' [State Strain Testing Network] being involved for a like number of years, then the total amount of time is 11-14 years. Meanwhile, measures undertaken aimed at accelerating the plant breeding process are making it possible to create a variety in just 7 years. A good example of this is the new mid-season ripening Omskaya 16 variety of spring wheat, bred from a hybrid combination in 1973.

The slow conversion over to the sowing of a new variety leads to a great shortfall in grain. For example, it has been computed that a shortfall of 1.2 million tons of grain occurred owing to the slow introduction of the Novosibirskaya 67 variety over a period of 6 years.

The existing system for introducing new varieties is incapable of ensuring rapid strain changing. A new variety is usually introduced into operations following its regionalization and this undoubtedly restrains the timely propagation of seed.

Meanwhile, many examples are available of the propagation of seed for new varieties long before their regionalization [1,2], both in our country (Rostovskaya Oblast) and abroad (U.S.A., England), Canada, Mexico and the GDR).

Since 1976, SibNIISKhoz has been mastering a system for the accelerated introduction of new varieties (see Figures 1 and 2). In addition to scientists from our institute, this work has also involved participation by the leaders of party and soviet organs and specialists attached to agricultural administrations, sortsem proms and supporting farms. The principal task of this system -- to reduce the amount of time required for converting over to the sowing of a new variety, following its regionalization, from 5-8 to 2-3 years. The essence of this system consists of propagating seed for the best variety commencing 5-6 years prior to its regionalization, in accordance with the results obtained from the first year of testing in a competitive nursery of a plant breeder.

For a more objective evaluation and successful selection of a variety, preliminary testing of the variety is carried out on the fields of the institute's Department of Seed Production, in the so-called OTK [Department of Technical Control] and thereafter at the OPKh [experimental model farm] of the institute and at supporting and base farms organized in various zones in the Trans-Urals region, Siberia and northern Kazakhstan.

The propagation of seed for a promising variety is commenced based upon testing results. First of all, experimental and thereafter specialized seed production farms are converted over to this work. Optimum growing conditions are created for the plants of a new variety and a preference is shown for them during harvesting, drying and storage operations. Life begins for a new variety. Special agrotechnical

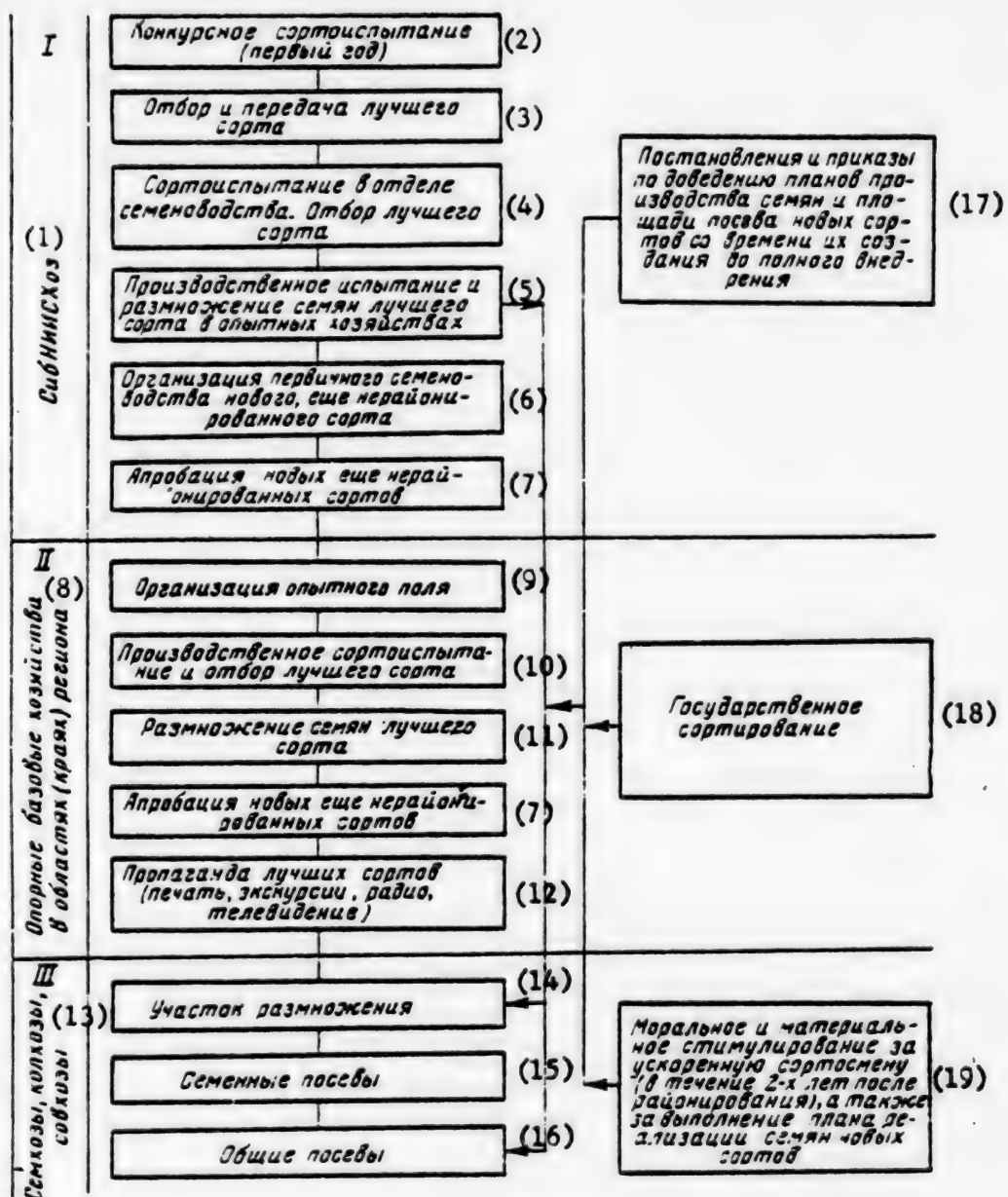


Figure 1. Omsk system for introducing new grain crop varieties into production

Key: 1. SibNIISKhoz

2. Competitive variety testing (first year)

3. Selection and delivery of best variety

4. Variety testing in seed production department.

5. Production testing and propagation of seed for best variant at experimental farms

6. Organization of primary seed production for a new and as yet unregionalized variety

7. Approval for new and as yet unregionalized varieties

8. Supporting base farms in oblasts (krais) of the region

9. Organization of the experimental field

10. Production variety testing and selection of the best variant

11. Propagation of seed for best variety

12. Publicizing of best varieties (press, excursions, radio, television)

13. Seed farms, kolkhozes, sovkhozes

14. Sector for propagation

15. Seed sowings

16. General sowings

17. Decrees and orders on seed production plans and sowing areas for new varieties, from time of creation up until complete introduction

Key (Continued):

18. State strain testing

19. Moral and material incentives for accelerated strain testing (for 2 years following regionalization) and also for fulfillment of the sales plan for the seed of new varieties.

methods are employed for the accelerated propagation of its seed -- sowing over fallow or irrigated tracts using low sowing norms and the strip or wide-row sowing method, application of phosphorus-potassium fertilizer and timely combative measures against weeds.

For the purpose of reducing the period of time required for propagating the seed for new varieties, use is made of a southern reproduction station organized by the USSR Ministry of Agriculture in Surkhandar'inskaya Oblast, Uzbekistan, where winter sowings are carried out using seed from the best varieties from a controlled or first competitive nursery. Thus, during the winter of 1976/77 5 kilograms of seed for the Omskaya 12 wheat variety were sown in the southern part of the country and in the spring of 1977 90 kilograms of seed were obtained. Moreover, a further sowing of this seed at Omsk this year resulted in the production of 20 quintals of high quality seed. Seed for the Nabat, Omskaya 16 and Omskaya 17 wheat varieties was propagated in this manner.

An important element in the system for the accelerated introduction of new varieties is extensive production testing of them. It is presently being carried out at 80 base and supporting farms organized in 14 oblasts, krays in the Trans-Urals region, Siberia and northern Kazakhstan (see Figure 3). In all, this encompasses an area of 32 million hectares, or 26 percent of all grain crop sowings in the country and 59 percent of the spring wheat area.

For the purpose of furnishing scientific-methodological assistance in the carrying out of experiments, representatives from a group of highly skilled heads of laboratories and plant breeding centers are assigned to each oblast on a voluntary basis and to supporting farm -- scientific workers. In all, 80 individuals from the institute are participating in this work. By way of furnishing assistance to the specialists at supporting farms, brochures and aids were published on the methods for carrying out experiments, cultivation technology and on descriptions of new varieties. In addition, we conduct seminar-conferences twice each year. During the 1978-1980 period, seven such conferences were organized in Omsk, with the participants able to acquaint themselves with the achievements realized in plant breeding, feed production, farming and mechanization. In addition, the results were summarized and plans were approved for testing new and as yet non-regionalized varieties, for propagating seed and introducing into operations the best of the varieties on farms in rayons throughout the oblast.

The operational experience accumulated in the production testing of new and as yet non-regionalized varieties reveals that this is one of the best forms for publicizing new plant breeding innovations. A demonstration of promising varieties considerably in advance of their regionalization, directly on kolkhoz and sovkhoz fields, ensures that the farm workers will become acquainted with them in a timely manner and that the seed will be propagated in advance. A testing sector for new varieties in Omskaya Oblast is affectionately referred to as an "agronomist's

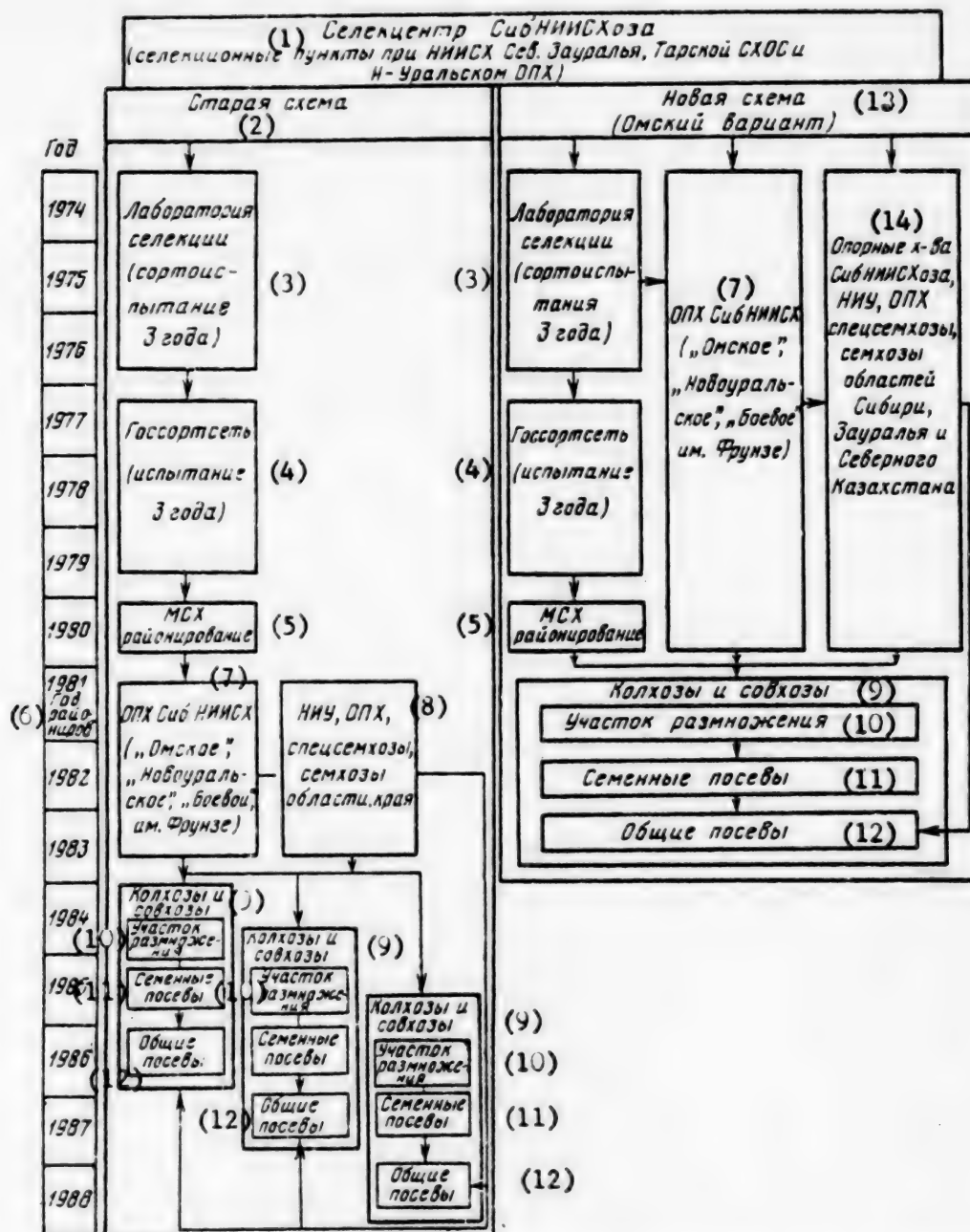


Figure 2. Plan for introducing new grain crop varieties into production

Key: 1. Plant breeding center of SibNIISKhoz (plant breeding stations of NIISKh for northern Trans-Urals region, Tarskiy SKhOS (agricultural experimental station and the N-Ural'skiy OPKh)

2. Old plan

3. Plant breeding laboratory (strain testing 3 years)

4. State Strain Testing Network (testing 3 years)

5. MSKh [Ministry of Agriculture] regionalization

6. 1981, year of regionalization

7. OPKh's of Siberian Scientific Research Institute of Agriculture (Omskoye, Novoural'skoye, Boyevoye, imeni Frunze)

8. NIU [Scientific Institute for Fertilizer], specialized seed farms, oblast and kray seed farms.

9. Kolkhozes and sovkhoses

10. Propagation sector

Key (Continued):

- 11. Seed sowings
- 12. General sowings
- 13. New plan (Omsk variant)

- 14. Supporting farms of SibNIISKhoz, NIU, OPKh, specialized seed farms, seed farms of oblasts in Siberia, the Trans-Urals region and northern Kazakhstan

experimental field" and it is becoming a school for leading experience and scientific achievements for leaders, specialists and all agricultural workers in the rayon and oblast. Successful work in connection with the introduction of new varieties is being carried out on many supporting farms throughout the oblast, which were organized in 1977, with one to each rayon. These include the Elita, Kop'yevskiy, Sibiryak and Nizhneirtyshskiy sovkhoses, the Zarya Kommunizma Kolkhoz and others. They were the first to carry out the strain changing for spring wheat, having replaced Saratovskaya 29 with Novosibirskaya 67 and Omskaya 9. They achieved a cropping power of 25-30 quintals per hectare. At the Novoural'skoye Experimental Farm, which is located in the steppe zone, Omskaya 9 in 1980 produced a yield of 32 quintals per hectare on an area of 20,000 hectares, 34.3 quintals per hectare on 11,000 hectares and on individual fields sown following fallow -- 52 quintals of wheat grain per hectare.

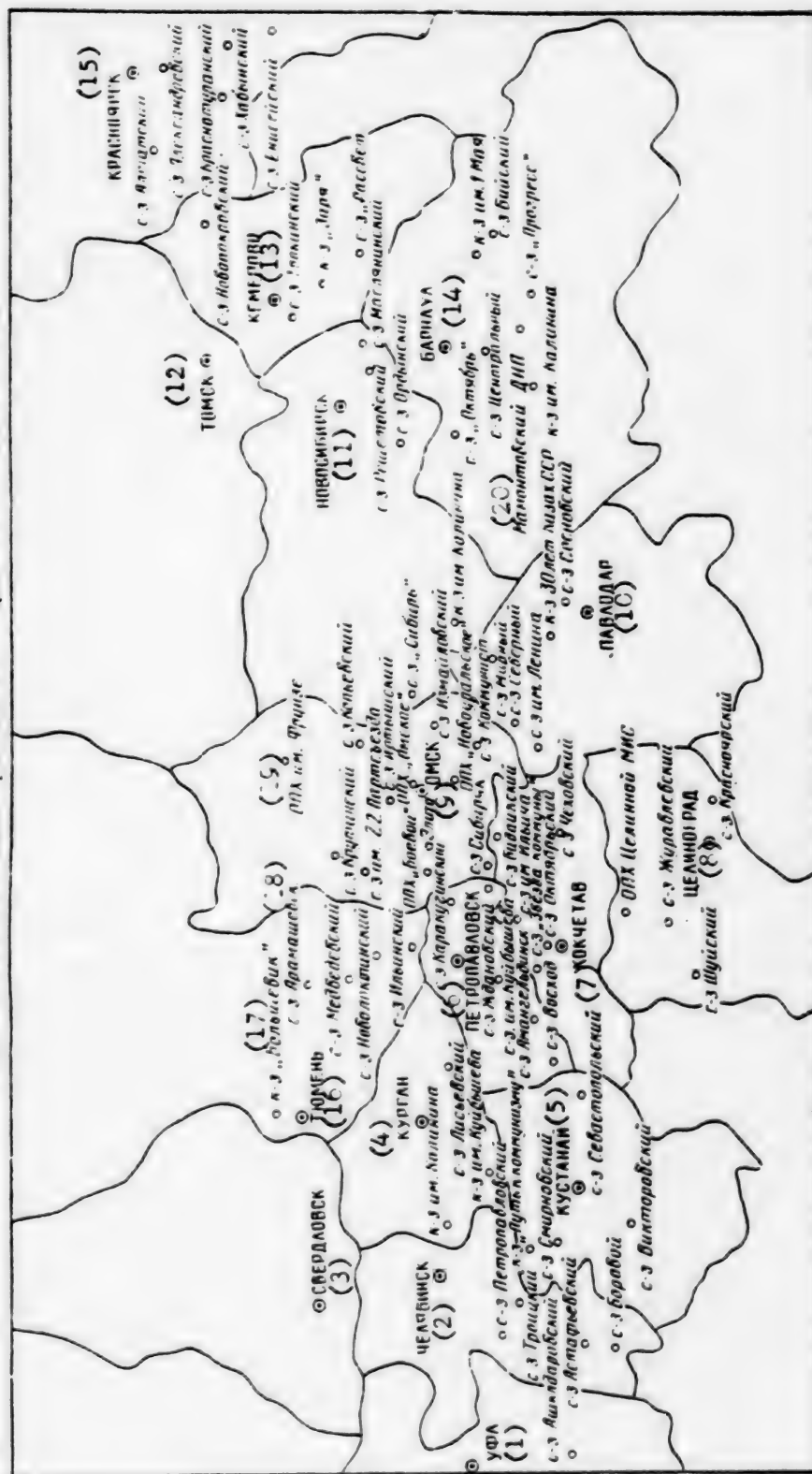
Production testing and the introduction of new varieties have been organized well in Mamontovskiy Rayon in Altayskiy Kray (the individual from the institute who is responsible for the kray -- the head of the Seed Production Laboratory V.S. Verevkin), where the 1st secretary of the Mamontovskiy Rayon CPSU Committee F.D. Ivankov and the director of the Palace of Scientific-Technical Progress V.I. Gatsenbiller have become initiators in the campaign to introduce new varieties into operations.

In Kokchetavskaya Oblast (the responsible individual from our institute is the head of the Laboratory for Genetic Immunity B.G. Reyter), the best results in the introduction of new varieties are being obtained at the Bidaikskiy and Chekhovskiy sovkhoses. As a result, the new Omskaya 9 variety, during the second year of its regionalization, will this year be grown here on its planned area of 450,000 hectares.

Interesting operational experience in the testing of varieties and in seed propagation has been accumulated in Chelyabinskaya Oblast (responsible individual from the institute is the head of the Plant Protection Laboratory A.I. Shirokov). New varieties obtained from many plant breeding institutes are under study at the Troitskiy supporting farm. Based upon test results, propagation of the new and highly productive Rossiyanika spring wheat variety, developed at YuzhuralNIIZ (Chelyabinsk), was intensified. This work was also organized in an exemplary manner at the Put' K Kommunizmu Kolkhoz in Fedorovskiy Rayon, Kustanayskaya Oblast (individual from the institute responsible for the oblast -- head of the Laboratory for the Breeding of Durum Wheat, V.A. Savitskaya).

The Omskaya 9 spring wheat variety serves as a good example of the introduction of a new variety based upon use of the new system. During the 3 year period in which it was tested within the State Strain Testing Network, its area increased from 170 to 6,000 hectares and in 1980, the second year of its regionalization, it reached 461,499 hectares (see Table 1).

Figure 3. Supporting farms of SibNIISKhoz for the testing and introduction of new varieties into production (as of 1 March 1981)



Key:

1. Ufa
2. Chelyabinsk
3. Sverdlovsk
4. Kurgan
5. Kustanay
6. Petropavlovsk
7. Kokchetav
8. Tselinograd
9. Omsk
10. Pavlodar
11. Novosibirsk
12. Tomsk
13. Kemerovo
14. Barnaul
15. Krasnoyarsk
16. Tyumen'
17. Bol'shevik Kolkhoz
18. Aramashevsk Sovkhoz
19. Experimental Model Farm imen' Frunze
20. Manontovskiy Alternate Observation Post

The introduction of this variety into operations, in accordance with the new system, has made it possible to obtain 1.3-1.5 million additional tons of grain, or 78-90 million rubles of net income.

The new system is presently being employed in the propagation of seed for a number of non-regionalized varieties of wheat developed by SibNIISKhoz. The seed production for other varieties of wheat -- Almaz and Irtyshanka 10 -- is being carried out in accordance with the generally accepted and approved system, with the propagation of seed taking place following their regionalization. Thus the sowing areas for the Irtyshanka 10 variety, during the year of regionalization, are extremely small and amount to only 197 hectares.

Table 1

Dynamics of Growth in Sowing Area For New Omskaya 9 Spring Wheat Variety,
(in hectares)

Year	Stages of Variety Testing	Actual Sowing Area
1973	Second year of competitive testing	3
1974	Third year of sompetitive testing	17
1975	First year of state testing	170
1976	Second year of state testing	703
1977	Third year of state testing	6000
1978	Considered to be promising	37606
1979	First year of regionalization	129299
1980	Second year of regionalization	461499
1981	Third year of regionalization	1200000*

* Sowing area computed according to availability of seed

In accordance with the new system, the introduction of varieties requires long-range plans for the propagation of seed for new and as yet non-regionalized varieties, commencing with the first year of competitive variety testing at a plant breeding institute and ending with plans for the production of this seed at elite seed production farms, kolkhozes and sovkhoses in the various rayons, oblasts and republics. The plans are composed with indications as to the executive institutes, the periods and volumes for the production of quality standardized seed and the sowing areas from the first year of life for a variety right up until its complete introduction. Each year these plans are supplemented by newly created varieties.

We developed a model long-range plan for the introduction of a new variety of spring wheat, which called for it to be sown on an area of 1 million hectares during the third year of regionalization (see Table 2). This plan was composed for oblasts in western Siberia and can be used by oblast and republic agricultural organs by way of an example.

Existing plans for the production of seed for high reproductions must be reviewed. Plans are also required for the production of elite seed not only for strain renewal but also for strain changing purposes. The plans for the production of elite seed for strain changing purposes must be composed so as to ensure the availability of sufficient seed for the new variety, during the first year of its

regionalization, for the propagation tracts (one fourth of the seed sowings) of all farms in the zone of cultivation.

Measures have been undertaken in Omskaya Oblast aimed at increasing the production of seed for new varieties by a factor of 3-5, with the Kolos Scientific-Production Association of SibNIISKhoz being created for this purpose. This association includes the Novoural'skoye, Omskoye and imeni Frunze experimental farms, the Torskaya SKhOS [agricultural experimental station] and an SKB [special design bureau]. The overall area of the NPO [scientific-production association] is 60,000 hectares. In 1980, this association produced 20,000 tons of seed for mainly new varieties for strain changing purposes, with future plans calling for such production to be raised to 30,000-32,000 tons.

Table 2

Model Long-Range Plan for the Production of Seed for a New and As Yet Non-Regionalized Variety of Wheat

Institute	Stages of Variety Testing	Sowing Area, in hectares	Seed Production Plan, in tons
SibNIISKhoz	KSI [competitive variety testing] of first year	100m ²	25 kg
SibNIISKhoz	KSI of second year	0.2	0.6
SibNIISKhoz	KSI of third year	4	10
OPKh of SibNIISKhoz	GSI [state variety testing] of first year	60	100
"	GSI of second year	800	1,000
"	GSI of third year	6400	6,400
Kolkhozes and sovkhoses	Considered to be promising	40000	32,000
"	First year of regionalization	120000	72,000
"	Second year of regionalization	360000	200,000
"	Third year of regionalization	1000000	200,000

The experience accumulated during 4 years of collaboration with party organs and local soviets in 14 oblasts of Siberia and northern Kazakhstan reveals that the introduction of new varieties has still not become a priority task of the agricultural organs in a number of oblasts, krays and republics.

In the creation of plant breeding centers and future plants for the continuous production of varieties, their work should be coordinated with the activities of the State Committee for the Strain Testing of Agricultural Crops of the USSR Ministry of Agriculture, which in addition to testing new varieties, is concerned with their introduction into production and also bears direct responsibility on the whole for the cropping power in a rayon, oblast and throughout the country. Deserving of support is the recommendation by this organization to create a testing service at its own experimental farms, resulting in the formation of a powerful base for the propagation of seed for new varieties.

The work directed towards carrying out strain changing involves many organizational-economic difficulties. Existing measures for issuing moral and material incentives for over-fulfillment of the sales plan for seed of high reproductions and for reducing the period of time required for replacing an old variety with a new one are clearly inadequate. The seed for old outgoing varieties is still valued more highly than that for new varieties. Thus the leaders of farms engaged in producing elite seed are not interested in fulfilling a seed production plan for new varieties.

We are of the opinion that all scientific-research institutes in the region must participate in the accelerated introduction of new varieties. The supporting farms must carry out tests on promising varieties obtained from all of the plant breeding institutes and the best of them, regardless of the department involved, must be introduced rapidly into production operations. Supporting farms should ideally be organized at the seed farms of sortsemproms in the oblast, kray and republic. This work is presently being carried out through the sortsemproms.

The introduction of new varieties into production will be accelerated considerably if the plant breeding institutes in a zone or region are combined together for the collective creation of varieties (similar to the Sever Program, headed by Academician G.S. Galejev).

The use of a complex of the mentioned organizational-technological measures for the introduction of new varieties will make it possible to solve the principal task of seed production -- to carry out strain changing over a period of 2-3 years and to employ as early as possible the latest plant breeding achievements for increasing the gross yields of grain.

Conclusions

Extensive production testing and the propagation of seed for new and as yet non-regionalized varieties, considerably prior to their official acceptance, will ensure a reduction in the period of time required for converting over to sowing a new variety from 5-8 years following its regionalization to 2-3 years. The propagation of seed for the best variety should be commenced 5-6 years prior to its regionalization. For an objective evaluation and successful selection of a variety, its testing should be carried out at OPKh's of scientific-research institutes -- breeders of new varieties, supporting and base farms located in various soil-climatic zones throughout the region.

The introduction of the Omskaya 9 spring wheat variety, in accordance with the proposed system, made it possible to achieve the area planned during the second year of regionalization in Omskaya, Kokchetavskaya and other oblasts of Siberia and northern Kazakhstan.

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SOIL PROTECTIVE CULTIVATION DURING 1979-1980 AGRICULTURAL YEAR

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/Text/ The southern steppe of the Ukraine is characterized by a moderate climate, an uneven precipitation throughout years and seasons, a frequently big moisture deficit during plant vegetation and a low relative air humidity during the formation and swelling of grain. Long droughts are observed during the summer and fall period, which makes it difficult to obtain timely seedlings of winter crops after nonfallow predecessors and during some years after clean fallow as well. The hydrothermal coefficient does not exceed 0.55 to 0.65 there and during summer and fall months it often is below 0.5.

The 1979/80 agricultural year was preceded by an acutely arid summer period. The drought was especially severe in Genicheskiy, Ivanovski, Novotroitskiy, Chaplynskiy and Skadovski Rayons in Khersonskaya Oblast, where arable land is located near the Sivash and the Azov and Black Seas. During the summer months of 1979 the precipitation comprised 49 to 51 percent of the average long-term amount. In June the precipitation was 1.7 mm and in July, 13 mm, which was two-fifths to one-third of the norm. By the time of winter crop sowing in the fall of 1979 the sowing soil layer, even after black fallow, dried up to such an extent that it was not possible to obtain good seedlings with the use of disk seeders. On the 20th day after sowing was done with a disk seeder the density of seedlings was 207 plants per square meter and, when sowing was done with a stubble seeder, 448 plants. After nonfallow predecessors winter crops were sown later than the optimum time. Seedlings began to appear after the rains at the end of October. The fall of 1979 was cool. In October the air temperature was 3.9°C lower than the average long-term temperature and in November, 0.3°C lower. The growth and development of late sprouting plants were slow. January and February of 1980 were characterized by frosty and snowy weather. The average monthly air temperature in January was -6.1°C, while the average long-term air temperature was -3.1°C. Spring was prolonged and cool. The air temperature was 2.7°C below the norm in March and 1.7°C, in April. The spring vegetation of winter crops was delayed 12 to 14 days, as

compared with the ordinary periods. March and April 1980 were rainy. The precipitation was 84.8 mm, while the average long-term amount was 42 mm. From May through July there was no effective precipitation. In May the precipitation was 2.6 to 5 mm, which was one-sixth to one-twelfth of the norm. From 21 through 28 June the air temperature rose sharply (to 34°) and the relative humidity dropped (to 28 percent).

All this had an effect on the harvest, because the dry wind coincided with the phase of milky-waxy and waxy ripeness of winter wheat and caused a premature ripening of grain.

The vegetative period of the 1980/81 agricultural year, in contrast to the previous year, was favorable. After the abundant precipitation in fall good seedlings were obtained after all predecessors. Winter was warm and rainy. The vegetation of winter crops did not stop until spring. A total of 384.7 mm of rain fell during the vegetation of winter wheat, which comprised 142 percent of the long-term norm. From 12 May until full ripeness (5 Jul) there was no effective precipitation. In June the air temperature reached 35 to 37°C and the relative air humidity dropped to 23 percent. From the heading stage until full ripeness plants were under conditions of a severe air drought with minimal moisture reserves in soil.

In 1980 the wheat harvest after black fallow largely depended on the technology of its cultivation and method of sowing. In the south of the Ukraine fallow is cultivated according to soil protective and traditional technologies. With soil protective technology black fallow is plowed with deep digging subsurface cultivators and stubbles or remains of stems of row crops are left on the surface. Fallow is managed with antierosion cultivators and sowing is done with stubble seeders. When fallow was cultivated according to the soil protective technology and winter crops were sown with stubble seeders, timely seedlings and a higher harvest were obtained and development phases were 2 to 3 days earlier than on sown areas after fallow with the ordinary technology. According to the data of the Prisivash Experimental Land and Forestry Reclamation Station of the Ukrainian Scientific Research Institute of Forestry and Land Reclamation and of the Genichesk Experimental Station of the All-Union Scientific Research Institute of Corn, in 1980 the harvest of winter wheat on fallow with the soil protective technology was 3.4 quintals per hectare higher than on fallow with the traditional technology.

On the Kolkhoz imeni Karl Marx in Genicheskiy Rayon, where fallow was cultivated according to the soil protective technology and was kept in a clean state, the wheat harvest was 42.8 quintals per hectare. However, on the neighboring Kolkhoz imeni 21 S'yezda KPSS, where fallow was prepared according to the traditional technology, it was 11.7 quintals per hectare lower.

The effectiveness of the soil protective technology of cultivation of black fallow depends primarily on a better accumulation and a more productive utilization of moisture by plants. During 9 years of observations the reserves of available moisture in the 1.5-meter soil layer on fallow, where the soil protective technology, as compared with the ordinary technology, was used, were 30 mm higher in spring, 24 mm, in fall--during the period of winter crop sowing--and 12 mm, during vegetation in spring and, at the same time, the coefficient of water consumption of winter wheat decreased 4 to 13 percent.

Good tillering and a more developed root system on areas sown with winter wheat after fallow, where the soil protective technology with high moisture reserves in soil was used, contributed to a better swelling of grain and to a greater resistance of plants to sukhoveys. For example, when on 19 to 21 June 1980 the sukhovey reached the greatest force, the loss of water by grain at the stage of milky-waxy ripeness on areas sown with wheat after fallow cultivated according to the soil protective technology comprised 2.9 percent and according to the ordinary technology, 5.4 percent. From the moment of the filling until full ripeness of grain its formation on fallow, where the soil protective technology was used, occurred more favorably, to which the mass of 1,000 grains attests (table 1).

The excess of the mass of 1,000 grains of winter wheat on sown areas after fallow, where the soil protective technology of its cultivation was used, was 0.65 to 0.82 g during the period of grain formation and 1.35 to 3.64 g during the period of grain swelling. From 21 through 28 June, when the sukhovey wind was the harshest, the gap in the mass of winter wheat grain depending on the technology of fallow cultivation decreased somewhat. However, as soon as the harsh sukhovey stopped, the advantage in the mass of grain on sown areas after fallow with the soil protective technology was again manifested to an even greater degree (figure 1).

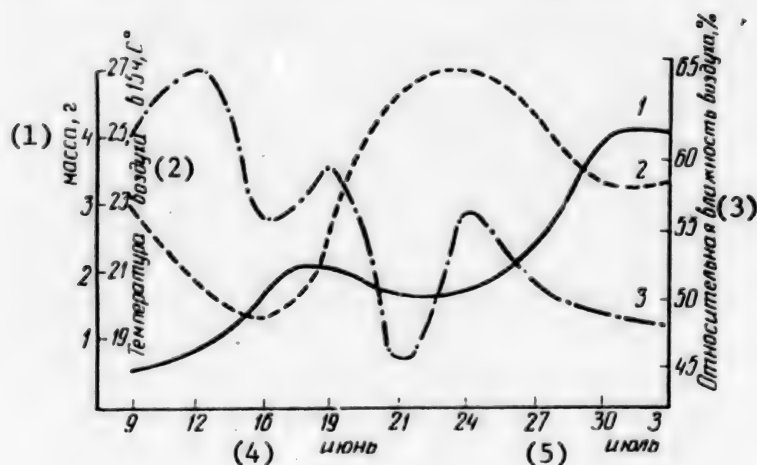


Figure 1. Excess of the mass of 1,000 grains of Bezostaya 1 winter wheat after fallow cultivated according to the soil protective technology (1), as compared with the traditional technology depending on the temperature (2) and relative humidity of the air (3).

Key:

- | | |
|--------------------------|---------|
| 1. Mass, g | 4. June |
| 2. Air temperature | 5. July |
| 3. Relative air humidity | |

Despite the quite high moisture reserves in soil on black fallow, the winter wheat harvest after it also depends on precipitation to a large extent. In 1972-1980 during the periods of its vegetation the precipitation in Genicheskiy Rayon ranged from 149 mm (1972) to 360 mm (1977). The output of grain after fallow or with its

traditional technology in an open field, when the precipitation during the vegetation was 173 mm, was 25.7 quintals per hectare; 222 mm, 40.0 quintals per hectare; 327 mm, 41.7 quintals per hectare. When fallow was cultivated according to the soil protective technology, it was 0.6, 0.9 and 2.8 quintals per hectare higher respectively in an open field and under the overall effect of forest belts and the soil protective technology, 5.7, 2.2 and 5.3 quintals per hectare higher (figure 2). The determination index indicating the proportion of the effect of precipitation on the harvest on sown areas in an open field was 65 percent with the traditional technology of fallow cultivation, 63 percent with the soil protective technology and 53 percent with an overall use of forest belts and the soil protective technology. The drop in the determination index indicates that the productivity of wheat depends not only on the precipitation, but also on moisture reserves in soil, which were higher on sown areas where fallow was cultivated according to the soil protective technology.

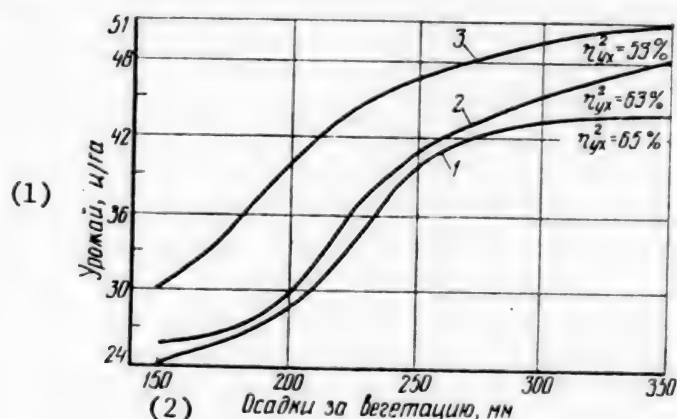


Figure 2. Winter wheat harvest after fallow depending on the technology of its cultivation and precipitation in 1972-1980: 1--traditional, open field; 2--soil protective, open field; 3--soil protective, interbelt field.

Key:

1. Harvest, quintals per hectare
2. Precipitation during vegetation, mm

In the spring of 1980 on large areas winter wheat after stubble predecessors died as a result of damage by the ground beetle. Some specialists attributed this phenomenon to the surface cultivation of soil and to the presence of stubbles in fields. However, as it turned out during a careful examination, this was not caused by surface cultivation (the ground beetle also was in plowed fields), but by the fact that it was carried out late and crop rotations were not observed. Where scuffling and cultivation were carried out immediately after harvesting and soil was kept in a clean state before the sowing of winter crops, the damage to crops was negligible. On the Pamyat' Il'icha Kolkhoz, the Shlyakh Il'icha Kolkhoz, the Priazovskiy Kolkhoz and the Kolkhoz imeni 22 S"yezda KPSS in Genicheskii Rayon, where nonfallow predecessors were cultivated carefully, reseeding comprised only 10 to 12 percent. However, on the neighboring 40 Let Oktyabrya Kolkhoz, the Kolkhoz imeni Kalinin and the Kolkhoz imeni 21 S"yezda KPSS, where surface cultivation and plowing were delayed and soil was overdried by weeds and windfall, 54 to 92 percent of the wheat after nonfallow predecessors suffered.

The output of wheat in the first group of farms was 29.3 quintals per hectare after peas, 23.5 quintals per hectare after corn and 22.3 quintals per hectare after winter crops and in the second group, 8.7, 4.3 and 11.4 quintals per hectare less respectively. On the Kolkhoz imeni 21 S^yezda KPSS and the 40 Let Oktyabrya Kolkhoz winter wheat after winter crops perished and on the Kolkhoz imeni Kalinin 38 percent of it remained.

During all the years higher moisture reserves in soil were observed with surface cultivation than with plowing. Thus, in its 1.5-meter layer, on the average, in 1976-1980 with surface cultivation moisture reserves were 12 mm higher in fall during the period of winter crop sowing and 15 mm, in spring. On the average, with surface cultivation the density of seedlings was 330 seedlings per square meter, which was 103 seedlings per square meter, or 45 percent, more than with plowing.

The winter wheat harvest after nonfallow predecessors also depends on the precipitation of the vegetative period. The closest correlation between them is observed with surface cultivation. With plowing, owing to the loss of moisture during the presowing period, uneven depth of seed placement and late seedlings during an arid fall, as was the case in 1977, an increase in precipitation does not always lead to an increase in the harvest (table 2). With surface cultivation such phenomena were not observed. The precipitation always increased the harvest and a closer correlation between them was observed (figure 3).

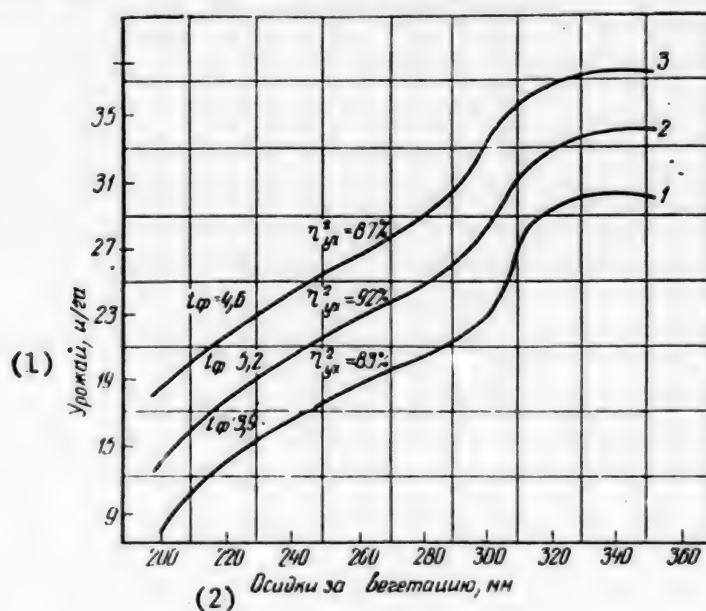


Figure 3. Winter wheat harvest after winter crops with plowing in an open field (1) and with surface cultivation in an open (2) and interbelt (3) field depending on the precipitation in 1976-1980.

Key:

1. Harvest, quintals per hectare
2. Precipitation during vegetation, mm

Table 1. Increase in the Mass of 1,000 Grains of Winter Wheat After Fallow Depending on the Technology of Its Cultivation in June-July 1980

Technology	9/VI	12/VI	16/VI	19/VI	21/VI	24/VI	27/VI	30/VI	3/VII
Soil protective	4.11	6.53	10.90	16.55	20.03	27.73	34.00	38.65	41.13
Traditional	3.46	5.71	9.55	14.28	20.41	25.96	31.93	35.01	37.10
Excess of the first	0.65	0.82	1.35	2.27	1.62	1.77	2.07	3.64	4.03

Table 2. Winter Wheat Harvest After Winter Crops Depending on the Precipitation and Method of Soil Cultivation, quintals per hectare. Prisivash Experimental Land and Forestry Reclamation Station

Years	Precipitation during vegetation mm	Field			
		Interbelt		Open	
		Cultivation			
		1	2	3	4
		surface, 8-10 cm	plowing, 20-21 cm	surface, 8-10 cm	plowing, 20-22 cm
1976	197	16.1	10.2	11.7	7.4
1979	243	22.0	17.4	18.5	13.4
1980	303	35.0	31.8	30.7	29.5
1978	318	35.7	32.9	31.8	22.7
1977	360	38.6	36.8	34.8	33.6
Average		29.5	25.8	25.5	21.3

3-4 HCP₀₅ = 4.07 Excess of surface cultivation over plowing = 4.2 quintals per hectare (20 percent)
 1-4 HCP₀₅ = 3.97 Excess of surface cultivation over plowing = 8.2 quintals per hectare (38 percent)

The harsher the weather conditions during vegetation, the more effective surface cultivation was. Thus, as a result, the output of winter wheat grain after winter crops in an open field increased 11 to 12 percent during years favorable in terms of precipitation (1977 and 1978), 14 to 20 percent, during years with an arid spring (1979 and 1980) and 30 percent, during years when the drought continued from fall to spring. With an overall use of surface cultivation and forest belts the increase in grain comprised 26-27, 41-46 and 92 percent respectively.

It should be noted that with plowing, even when it was carried out immediately after harvesting and soil was kept in a bastard fallow state before sowing (cultivation of nonfallow predecessors after the harvesting of a preceding crop before sowing, when two or three cultivations against weeds and windfall are carried out), the output of wheat was lower than with prompt surface cultivation. On the Kolkhoz imeni Shchors in Ivanovskiy Rayon in 1980 the harvest of wheat of the Odesskaya 51 variety after stubble predecessors with careful management of soil of the bastard fallow type was 27 quintals per hectare with plowing and 30 quintals per hectare with surface cultivation. On the Kolkhoz imeni 21 S^{ty}ezda KPSS in Genicheskii Rayon in 1981 the output of winter wheat grain after fallow winter crops was 28.0 quintals per hectare with surface cultivation and 17.0 quintals per hectare with plowing. In the experiments of the Genichesk Experimental Station the productivity of winter wheat crops after corn for silage in 1980 was 20.7 quintals per hectare with surface cultivation at the depth of 8 to 10 cm and 16.1 quintals per hectare with plowing at the depth of 20 to 22 cm and in 1981, 27.5 and 25.8 quintals per hectare respectively.

For the purpose of a more productive use of arable land many farms in Khersonskaya Oblast after fallow winter crops sow peas, not repeated winter crops, and then wheat. In this case peas accumulate nitrogen in soil through the absorption of molecular nitrogen by nodule bacteria, the soil structure improves, the number of various pests decreases, moisture accumulates and conditions for a prompt and better preparation of soil for winter crops are created. On the average, in 1976-1980 the productivity of winter wheat after peas on farms in Genicheskii Rayon was 28.2 quintals per hectare, which was 4.5 quintals per hectare lower than after black fallow, but 5.7 quintals per hectare more than after the stubble of winter wheat.

In 1981 the harvest of winter wheat after peas with surface soil cultivation was 3 to 5 quintals per hectare higher than after clean and occupied fallow. On the Ukraina Kolkhoz in Genicheskii Rayon the harvest of winter wheat sown after peas on an area of 224 hectares was 44.7 quintals per hectare, which was 5.9 quintals higher than after occupied fallow.

The effectiveness of peas as predecessors for winter crops is fully manifested when moldboard plowing at the depth of 20 to 22 cm is replaced with surface cultivation at the depth of 10 to 12 cm. In 1980 the harvest of winter wheat after peas with surface cultivation on the Yuzhnyy Kolkhoz, the Zhovtneva Peremoga Kolkhoz, the Kolkhoz imeni Shchors, the Kolkhoz imeni Lenin and the Kolkhoz imeni Zhdanov in Ivanovskiy Rayon and on the Ukraina Kolkhoz, the Gruziiya Kolkhoz and the Volna Revolyutsii Kolkhoz in Genicheskii Rayon was 30 to 35.1 quintals per hectare. On farms where moldboard plowing was used or surface cultivation was carried out very late wheat yielded 10 to 14 quintals of grain per hectare less after peas.

With surface cultivation of nonfallow predecessors a high wheat harvest is obtained when sowing is carried out with disk seeders, especially of the SZP-3.6 type. During all the years, when winter wheat was sown after nonfallow predecessors, stubble seeders lowered its grain output both with plowing and on surface cultivated plots. On the average, in 1977-1980, according to the data of the Prisivash Experimental Land and Forestry Reclamation Station, in experiments where disk seeders were used the output of winter wheat grain after winter crops was 2.9 quintals per hectare higher. As the amount of precipitation during vegetation increased, so did the harvest (figure 4). In 1980 its harvest after the stubble of winter crops, when sown with disk seeders of the SZP-3.6 type, in an interbelt field was 36.9 quintals per hectare with surface cultivation and 34.4 quintals per hectare with plowing and in an open field, 35.1 and 34 quintals per hectare respectively. When it was sown with stubble seeders, it was 3.7, 5.1, 8.8 and 8.4 quintals per hectare lower.

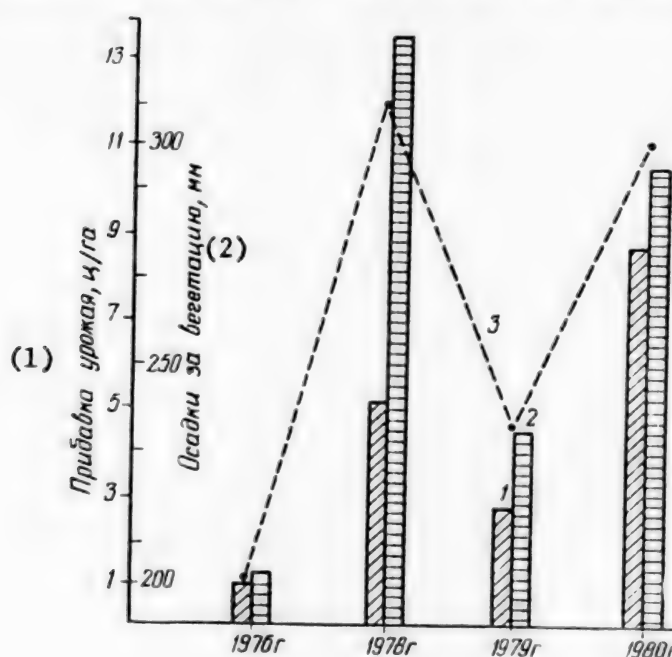


Figure 4. Increase in the harvest of winter wheat after winter crops as a result of sowing with disk seeders with surface cultivation in an open (1) and interbelt (2) field as compared with plowing in an open field depending on precipitation (3) during vegetation.

Key:

1. Increase in the harvest, quintals per hectare
2. Precipitation during vegetation, mm

According to the data of the Genichesk Experimental Station, in 1980 the productivity of winter wheat after corn for silage, when sown with a disk seeder, was 2.3 to 6.5 quintals per hectare higher than when a stubble seeder was used and in 1981, 1.2 to 2.4 quintals higher.

During all the years of the experiment the best seedlings of winter wheat were obtained when it was sown with disk seeders. Wider row spacings with the use of stubble seeders increase the bleaching of soil, which in combination with the thinness of seedlings increases the weediness of winter crops as early as fall. When crops are not sprayed with herbicides on schedule in spring, weeds shade plants, which lowers their productivity sharply. In the south of the Ukraine stubble seeders proved their value only when winter crops were sown after black fallow, when soil overdried up to the depth of 10 to 12 cm and it was impossible to obtain seedlings with the use of disk seeders. However, sowing with stubble seeders under these conditions makes it possible to place seeds in a moist bed, which guarantees the appearance of seedlings even during a prolonged drought.

According to the data of the Prisivash Experimental Land and Forestry Reclamation Station, in 1980 sowing with stubble seeders after black fallow increased the output of winter wheat by 1.5 to 2.4 quintals per hectare. In the experiments of the Genichesk Experimental Station its harvest, when sown with stubble seeders after fallow cultivated according to the soil protective technology, was 40.6 and according to the ordinary technology, 42.5 quintals per hectare, which was 5.3 and 4.2 quintals more than when it was sown with disk seeders (table 3).

Table 3. Winter Wheat Harvest in 1980 Depending on Predecessors and Used Seeders, quintals per hectare. Genichesk Experimental Station of the All-Union Scientific Research Institute of Corn

Soil preparation	Black Fallow		Corn for Silage	
	Seeder			
	SUK-24	SZS-9	SUK-24	SZS-9
Plowing, 28 to 30 cm	37.2	42.5	-	-
" 20 to 22 cm	-	-	22.4	16.1
Subsurface cultivation, 28 to 30 cm	36.4	40.6	-	-
Subsurface cultivation, 20 to 22 cm	-	-	21.8	15.3
Subsurface cultivation, 12 to 14 cm	35.5	39.2	-	-
Subsurface cultivation, 8 to 10 cm	-	-	21.4	18.3
Surface cultivation, 8 to 10 cm	-	-	23.0	20.7
Average	36.4	40.8	22.2	17.6
HCP ₀₅	2.03		3.44	

On some farms in the southern oblasts of the Ukraine stubble is burned before soil cultivation. At the same time, field protective forest belts are damaged by fire. Stubble burning is approved by some production workers and scientists as a sanitary agricultural method when wheat is sown after winter crops, which contributes to the destruction of pests and weeds and improves soil cultivation. It should be stressed, however, that this method nullifies the antierosion significance of surface and subsurface cultivation. During a dry fall, when seedlings are thinned out or when there are no seedlings, in open fields only stubble and the lumpiness of the upper soil layer serve as an inhibiting factor in the manifestation of wind erosion during strong winds. Stubble, covering soil, decreases its heating, which lowers the temperature of the upper layer and the unproductive expenditure of moisture from the root horizon.

Surface cultivation of the soil of nonfallow predecessors of winter wheat is effective not only during arid years, but also during years with a sufficient amount of precipitation. For example, in 1977, which was the most favorable year in terms of weather conditions and precipitation in the last 5 years, its harvest after winter crops on dark chestnut soil at the Order of Lenin Chervoniy Chaban State Breeding Plant, where surface soil cultivation was used, on an area of 844 hectares was 50.6 quintals per hectare. On the neighboring Put' k Kommunizmu Sovkhoz, where the soil conditions are identical and there was no difference in precipitation, the output of the grain of this crop after winter crops, where plowing was used and, in general, the standard of farming was lower, was 25.1 quintals per hectare lower.

In 1980 on southern chernozem in Nizhneserogozskiy Rayon the changeover to surface soil cultivation ensured an output of 25.3 quintals of grain crops per hectare and 26.9 quintals of winter wheat per hectare. In neighboring Verkhnerogachikskiy Rayon, where the soil and weather conditions are the same, but surface cultivation was not introduced widely, the harvest of grain crops was 4.5 quintals per hectare lower and of winter wheat, 4.9 quintals per hectare lower. In this rayon most farms use moldboard plowing. In 1980 the lowest harvest of grain crops--20.7 quintals per hectare--and of winter wheat--22 quintals per hectare--in Khersonskaya Oblast was obtained there, that is, 5.2 to 5.8 quintals per hectare lower than the average in the oblast. Old agricultural methods and the general low standard of farming in Verkhnerogachikskiy Rayon affected the productivity of grain crops not only during that year, but throughout the five-year plan as well. During the 10th Five-Year Plan the harvest of grain crops, despite the introduction of highly productive, new varieties and increase in fertilizer doses, in this rayon was lowered by 4.3 quintals per hectare as compared with the Ninth Five-Year Plan.

In Genicheskii Rayon, where the natural fertility of soil is lower and the precipitation is higher, in 1980 the harvest of grain crops was 2.5 quintals per hectare and of winter wheat, 5.1 quintals per hectare higher than in Verkhnerogachikskiy Rayon. During the 10th Five-Year Plan the average output of grain on farms in Genicheskii Rayon was 24.1 and of winter wheat, 28.5 quintals per hectare, which was 2.7 and 3.1 quintals per hectare higher than the productivity during the Ninth Five-Year Plan.

On the Volna Revolyutsii Kolkhoz, the Kolkhoz imeni Karl Marx, the Gruziiya Kolkhoz, the Shlyakh Il'icha Kolkhoz and the Kolkhoz imeni 60-Letiya Velikoy Oktyabr'skoy Sotsialisticheskoy Revolyutsii in Genicheskii Rayon, where advanced soil cultivation methods were introduced widely, during the 10th Five-Year Plan the harvest of grain crops increased by 3.6 to 5.8 quintals per hectare and of winter wheat, by 4.2 to 12.9 quintals per hectare. On the average, in 1976-1980 the output of wheat grain on nonirrigated land on these farms exceeded 30 quintals per hectare. During the 10th Five-Year Plan the total increase in the gross output of grain in Genicheskii Rayon was 154,000 tons (22 percent).

The effectiveness of soil protective cultivation under the 1979-1980 vegetation conditions was manifested not only where a drought was observed in the fall of 1979, but also in rayons with more favorable weather conditions. For example, in Veliko-Aleksandrovskiy Rayon southern chernozem has 4.5 percent of humus, the thickness of the humus horizon is 45 cm and the precipitation is 372 mm with fluctuations of 260 to 600 mm. In this rayon the fall of 1979 was good and crops

after all predecessors entered winter in a good condition. On the Bil'shovitskiy Nastup Sovkhoz of this rayon, despite summer sukhoveys and the lodging of crops as a result of wind and hail, in 1980 the harvest of grain crops was 38.2 quintals per hectare, on the Molodaya Gvardiya Kolkhoz, 31.4 quintals per hectare and, on the average, throughout the rayon, only 26.6 quintals per hectare.

Beginning in 1976 a set of forestry reclamation and antierosion agrotechnical measures has been used in the control of erosion, droughts and sukhoveys on the Bil'shovits'kiy Nastup Sovkhoz. Fields are protected by a network of forest belts and are cultivated according to soil protective technology and ever greater doses of organic and mineral fertilizers are applied. On the average, during the 10th Five-Year Plan every hectare of arable land on the sovkhoz received 36 tons of manure and, usually, ammonia water was used. At the beginning of the 10th Five-Year Plan 20 kg of the active substance of nitrogen per hectare of arable land were applied and 76 kg, at the end of the five-year plan. However, on the rayon's farms this indicator rose from 3 to 13 kg. During the Eighth Five-Year Plan the harvest of grain crops on nonirrigated land of 6,900 hectares on the Bil'shovits'kiy Nastup Sovkhoz was 30.5 quintals per hectare. During the Ninth Five-Year Plan it rose by 4.5 and during the 10th Five-Year Plan, 3.1 quintals per hectare. The gap in the productivity of grain crops on the sovkhoz, as compared with the average data on farms in Veliko-Aleksandrovskiy Rayon, was 5.8 quintals per hectare in 1976 and 11.6 quintals per hectare in 1980.

Conclusions

In the south of the Ukraine during the vegetative period of 1979/80 the weather conditions were extreme--a spring and summer drought during the year of winter crop sowing, a cold fall and spring, a long period of absence of rainfall and a sukhovey during the period of milky-waxy ripeness of grain. The reaction of winter wheat under these complex weather conditions depended on the predecessors and methods of soil cultivation.

Winter wheat sown with stubble seeders after black fallow cultivated according to the soil protective technology, despite the drought of the presowing period, formed good seedlings and tillering and suffered less from sukhoveys. The harvest totaled 41 to 43 quintals per hectare, which was 3.4 to 11.7 quintals per hectare more than on fallow where the ordinary technology and sowing with disk seeders were used.

With prompt surface cultivation of nonfallow predecessors in 1980 winter wheat produced 27 to 31 quintals of grain per hectare, which was 3.4 quintals per hectare more than with plowing. With late surface cultivation and plowing of nonfallow predecessors soil was dried by weeds and windfall and an extensive damage and death of crops caused by the ground beetle were observed.

The drill method of sowing with disk seeders, which contributes to a more uniform placement of seeds both in rows and on the area, is the best method of sowing after nonfallow predecessors during years with different weather conditions. At the same time, more favorable conditions are created for the appearance of seedlings even with slight fall rains, suppression of weeds with a dense grass stand and production of a high harvest.

In 1980 the increase in the harvest of winter wheat as a result of the use of disk seeders, as compared with stubble seeders, was 4.6 quintals per hectare (26 percent) after corn for silage and 8.8 quintals per hectare (33 percent) after the stubble of winter crops. The high effectiveness of the soil protective technology of cultivation of black fallow and of surface cultivation of nonfallow predecessors under the unfavorable weather conditions of the 1979/80 vegetative period was manifested only with a high standard of farming and the existence of an active network of field protective forest belts in fields. Taking the results of 1980-1981 and of previous years into consideration, in Khersonskaya Oblast every year the area of surface cultivated arable land is expanding and a network of forest belts is being established in fields.

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